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GOVERNMENT OF SIND

**POST WAR DEVELOPMENT
SCHEMES**

FIRST EDITION

KARACHI:

PRINTED AT THE GOVERNMENT PRESS

1945

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This book contains the Sind Government's first draft post-war Plan. It embodies the individual schemes prepared by the respective Heads of Departments. Many of the schemes are yet to be examined and approved by Government. This Plan therefore, indicates only the lines on which it is proposed to plan for the post-war period. The individual schemes have been grouped together under nineteen heads. The schemes have also been classified as of *Special Priority*, *All Province*, and *Particular Area Schemes*. This is a small province and it has not been felt necessary or advisable to restrict any schemes which will naturally be applicable to the whole of the Province, to a small concentrated area. As this publication is merely a compilation of the schemes prepared in the various Departments, extensive alterations will be necessary later on both in the light of the limiting factors of finance, staff and machinery that will be available and according to detailed scrutiny by Government. No Plan can be hard and fast. Some more schemes are likely to be added to the Plan later on, and some schemes will be materially altered if not abandoned altogether.

2. The object of any Government Plan should be to increase the happiness of the people. The improvements planned are broadly under three categories : (a) to improve the economic condition of the people, (b) to provide more health facilities, and (c) to provide more opportunities for education to the people.

3. The physical characteristics of the Province will have a profound influence on future development. Sind has been compared to Egypt. The reason for such an association is obvious. Sind is and has always been a Province of the Indus. This is even more so now that the river has been canalised along its entire length and will soon be part and parcel of three Barrages and their canals. The soil of major part of the Province is alluvial and is particularly suited to the cultivation of cotton, wheat and rice. But without water from the Indus, Sind will be a wilderness dependent for cultivation on the scarce and capricious rainfall.

4. The mineral resources of Sind are neither fully exploited nor fully surveyed. Industry must depend on imported coal or oil or else make use of the by no means inexhaustible supplies of firewood. The latter is at present just sufficient to meet the needs of domestic fuel consumption. The exploitation of water power to generate electricity is a matter deserving urgent investigation.

5. The Province is richly endowed by nature with fertile tracts, valuable forest and extensive sea and estuarine fisheries. Much attention has necessarily been given to schemes on irrigation, agricultural development, betterment of live-stock, fisheries and forestry from which the main improvement in the economic condition of the people is to be expected.

6. Karachi is the capital of the Province. The development of aviation has made this city the aerial gateway of India. Karachi will also be the principal sea-port for Northern India. Karachi is therefore bound to increase in size and population. It will house a large international colony. Karachi has great initial advantages, the best climate of any port of India, ample room for expansion, a clean and open city, a fine natural harbour and a

first-class air-port. In recognition of these, the Government of Sind has set up an Informal Committee consisting of the representatives of (1) the Provincial Government, (2) the local Military authorities, (3) the local Railway Administration, (4) the local Civil Aviation Directorate, (5) the Port Trust, (6) the Municipal Corporation and (7) the Karachi District Local Board, with a view to arranging for joint consultation and combined effort in the development of Karachi.

7. While planning must cover the whole range of national life and contemplate a more or less simultaneous drive in all directions, it is not possible to put into execution at once either all schemes or all parts of some schemes on account of the serious limitations of finance and organisation and lack of trained personnel. The order of priority cannot precisely be determined until the schemes are finalised, but a few general observations may be made in this connection. Development plans broadly fall into two categories—those that are directly productive and remunerative, *e.g.*, irrigation and hydro-electric projects, and those that are not directly remunerative, *e.g.*, education and public health. Agricultural schemes may be regarded as half-way between the two. The importance of schemes in the first category lies in the fact that they not only pay their way but also contribute to Government revenues which can be used to finance the schemes in the second category. Revenue-producing schemes, therefore, generally receive some precedence over revenue-spending schemes, although this does not mean that the latter should stand over till the execution of the former. In fact Sind is obliged to push ahead with its schemes of irrigation. It is almost a case of doing so or perishing.

But above all the highest priority must go to the training of staff. The experience of planning in certain countries goes to show that where the training of staff was rushed through, not only was the success of the plan marred but there was a colossal wastage of capital and equipment. Provision and training of both technical and administrative personnel must be regarded as a *sine qua non* of planning, and it has been decided that the existing training institutions must be enlarged or new ones set up to cope with the increased demand for trained and specialised staff. Batches of students will also be sent every year for technical training abroad until such facilities become available in India. The schemes likely to open large public works and to absorb labour discharged from war industries and military works or on demobilisation would also constitute special priority schemes.

8. Bearing the above considerations in mind the Sind Government have decided that the priority of post-war plans should be as follows :—

- (a) Training of the staff.
- (b) Irrigation, Waterways and Drainage.
- (c) Roads.
- (d) Agriculture and Forestry.
- (e) Education and Public Health.
- (f) Industrial and commercial development.

9. Government have appointed a Sind Provincial Development Board on the lines of the Reconstruction Committee of Council. Its composition and functions are given below :—

I—COMPOSITION.

Chairman.

1. The Honourable Premier.

Ex-officio Members.

2. All Honourable Ministers.
3. The Adviser to Government on Agriculture and Post War Development.
4. The President of the Council of Administration, Khairpur State.

Members.

5. J. Fraser, Esquire, M.L.A.
6. Lt.-Col. W. B. Hossack, M.L.A.
7. K. B. Jaffar Khan Gul Muhammad Khan Burdi, J.P., M.L.A.
8. Jamshed Nusserwanjee, Esquire.
9. Haji M. H. Gazdar, B.E., J.P., M.L.A.
10. Sayed Meharali Shah N. Bukhari.
11. Seth Partabrai Khaisukhdas, J.P., M.L.A.
12. Pribhdas Sakhavatrai Tolani, Esquire., B.A.
13. R. K. Sidhwa, Esquire, M.L.A.
14. R. B. Seth Shivrattan G. Mohatta.
15. Muhammad Yusif Khan Bahadur Khair Muhammad Khan Chandio, J.P., M.L.A.
16. Narain Kundanmal Bhojwani, Esquire., B.A. B.Sc. (London).

Secretary.

17. The Post War Development Officer and Joint Secretary to Government, Political and Miscellaneous Department.

Assistant Secretary.

18. Superintendent, Post War Development Branch of the Political and Miscellaneous Department.

II—FUNCTIONS.

1. To advise Government on all questions of policy, including the financing of the Post-War Development plans and individual schemes.
2. To assist Government in securing co-operation for achieving the aims and objects of Post-War Development from trade and agricultural organisations and the general public.
3. To receive reports on and examine the progress of the general Plan and the various departmental plans for Post-War Development.

10. This book is divided in two parts—the first comprising (1) twenty Chapters dealing with the post-war schemes under the various headings of development and on Finance, (2) key statements of costs of schemes for the first five years, and the second comprising the individual schemes in a form which enables their essential points to be seen at a glance.

CHAPTER I.

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RE-SETTLEMENT AND RE-EMPLOYMENT OF EX-SERVICEMEN.

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There are two main aspects of this question, *viz.* (a) land grant and colonisation schemes, and (b) schemes for the direct employment of *ex-service* men. Item (a) consists again of two separate problems : (i) Schemes for Sindhi *ex-servicemen* and (ii) Schemes for *ex-servicemen* from the other provinces.

2. As far as (i) is concerned there are very few Sindhi *ex-servicemen* to deal with. They can easily be absorbed in the agricultural economy of their own villages, and grant of land to them in the vicinity of their villages will not be difficult. As regards *ex-servicemen* from outside the province, no schemes have yet been prepared ; but the matter is receiving the attention of Government whose tentative decisions are as follows :—

(i) Government should do what it can to accommodate non-Sindhi *ex-Servicemen* on the land, both as peasant proprietors and 'haris'.

(ii) Full cost of the land should be charged to the Government of India.

(A reference has in this connection been made to the Government of India whose reply is awaited.)

(iii) The Makhi Dhand question should be excluded from the plan.

3. As regards item (b), the Government of Sind have reserved 10 per cent. of its appointments in all its Departments for those who have rendered approved war service. Military technical personnel can also be absorbed in the post-war schemes particularly those relating to irrigation, electric-power development, agriculture, roads and medical services. The number of technicians recruited from Sind is small, and there should be no difficulty in absorbing them in the appointments referred to above. No special scheme has therefore, been prepared for absorbing such personnel.

CHAPTER II.

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INDUSTRIES AND INDUSTRIAL TRAINING.

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Conditions in Sind do not favour heavy industrialisation or any large scale development of cottage industries. Cheap power which is one of the essential requisites of heavy industries is not available in this Province. If however the Government of India decide on dispersal of industry which seems to be desirable from certain points of view, some industries can be developed in Sind in the post-war period. The Port and Rail facilities at Karachi and in the Province are very good. Good quality cotton, and fairly good quality wool, oil-seeds in large quantities, raw-materials for cement and good quality salt are available in plenty. There is scope, therefore, for developing the industries connected with these raw materials. Industrial development however, is dependent on policies to be adopted by the Government of India for India as a whole. Therefore, the schemes for Industries Department do not contain any scheme for development of a major industry

2. Owing to the shortage of agricultural labour in the province and owing to two crops being raised in its major portion, there is neither surplus rural labour nor any spare time for the cultivator that could be employed in cottage industries. The Department of Industries has however, included in their schemes one for the development of cottage and small-scale industries (pages 2-3 of Part II of this publication).

3. It is a matter of common knowledge that the skilled industrial labour in Sind is imported mostly from outside. Facilities for technical education on a large scale must be provided in the Province to train Sindhis as technicians. This has been provided in the schemes of the Industries Department (pages 4-12 *ibid*).

4. As regards the industrial policy, the Sind Government does not contemplate, subject to certain reservations in connection with public utility services, any form of state-enterprise or monopoly except in Textile, Tanning and Fish-canning Industries. Private enterprise will be encouraged in a variety of ways. In the order of priority, "Industries and Industrial Development" has been assigned a place after "Education" and "Public Health".

CHAPTER III.

ROADS.

"The other great aim of post-war development is the improvement of the social services. The main social services must be developed in the following order :—

Communications,
Health,
Education.

I put communications first since I do not see how it is possible to effect any great improvement in health or education in the villages of India until they can be reached surely and quickly at all times."

His Excellency the Viceroy, Lord Wavell.

The Government of Sind's road plan is estimated to cost Rs. 28 crores for construction and improvement of 11,000 miles of road in this Province. This will take 15 years to execute. The scheme aims at placing every village and town of a population of over 1,000 on a road. In the first five years 3,800 miles will be improved or constructed at an estimated cost of 10 crores. The roads to be constructed will come under the following categories :—

Classes.		Mileage as per complete scheme.	Mileage in the first five-year programme.
National highways	...	567	167
National trails	...	291	210
Provincial highways	...	968	630
District roads (major)	...	3,451	1,052
By-passes	...	155	155
Desert roads	...	350	Nil
District roads (minor)	...	3,592	1,180
Village roads	...	1,637	487
Total		11,011	3,881

2. The national highways are expected to be constructed by the Government of India. The remaining roads will have to be constructed from Provincial Revenues. Steps will be taken for the expansion of the Engineering Department and the training of requisite staff. Firm indent for most of the machinery required during the first five years has been sent to the Government of India.

3. The question of construction of roads cannot be considered separately from the problem of their maintenance. The alluvial nature of the soil in large areas in this province and the absence of stone makes the problem formidable.

4. If the Government of Sind are unable to finance a 28 crore plan, the plan will have to be reduced in size. Meanwhile, it has been decided that :—

(i) The scheme should be financed from Provincial Revenues.

(ii) Road construction should be commenced immediately after the termination of the war.

(iii) Land acquisition proceedings should commence after the project is ready and proceed according to the order of priority assigned to roads. Care should be taken to see that land is not acquired much before the work is due to commence.

(iv) The Government of India should be approached to obtain priority for the supply of plant and machinery for the scheme during the war.

(v) Steps should be taken for the expansion of the Road Construction Department and the training of staff.

5. Complete details of the plan are given in the Narrative printed at pages 23-30 of Part II of this publication. The scheme has been assigned an order of priority next only to "Irrigation".

CHAPTER IV.

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ROAD TRANSPORT:

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There are at present no schemes under this heading of development. Transport is not a matter for which it is easy to produce a practicable five-year plan. Sind's road transport system conforms with and is partly the result of the character of Sind's roads. It is only with the advent of the war that a sort of arterial road system has developed. Consequently, licensed routes have been for short distances only, and through road traffic is impossible. However, as 99 per cent. of the roads were 'earth', and as Government and the local authorities never kept them in adequate repair, licensed owners concentrated on small rickety vehicles with a strong engine and light body.

2. The licensing system led to cut-throat competition and this meant a further lowering of the standard of vehicles. The question that arises is what improvement in road transport can be effected if the projected road programme is carried through. Eventually it will be necessary to convert the existing organization of the Provincial Motor Transport Controller into a skeleton Transport Department with the Controller as its Director. But this can be done only after sufficient progress has been made with road construction, the combined operating companies have been formed, and Petrol and Spare Parts Regulations are relaxed.

CHAPTER V.

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ELECTRIC POWER DEVELOPMENT.

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At present electricity in Sind is generated by coal or diesel oil. The plants are operated either by private licensees or municipal enterprise. The post-war plan under "Electric Development" (printed at pages 43-49 of Part II of this publication) provides for the construction of a high power electric generating station on the Rohri Canal near Rohri. About 8,000 Kilowatt will be generated and power supplied to Sukkur, Rohri, Shikarpur, Jacobabad, Garhi Yasin, Ratodero, Shahdadkot, Kambar, Larkana and other towns nearby. Government also propose to have an electric grid for the province excluding Karachi City. It is proposed to constitute an Electrification Board. For further details, please see the relevant Narrative (printed at pages 48-49 *ibid*).

CHAPTER VI.

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MINING DEVELOPMENT.

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No schemes have yet been worked out on this subject. As already pointed out in the Introductory Note, the mineral resources of Sind are neither fully exploited nor fully surveyed. Government of Sind are anxious to exploit the mineral wealth of the Province. The initial step will be a survey of mining resources carried out by an expert Geologist; the Government of India have been approached to secure for this Government the services of a suitable expert for this purpose.

CHAPTER VII.

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IRRIGATION WATER-WAYS AND DRAINAGE.

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Areas in northern and southern Sind outside the Barrage zone are at present dependent for irrigation on systems of inundation canals. The vagaries of the Indus make the water-supply very uncertain and this has a very harmful effect on cultivation in these areas. Government of Sind propose, therefore, to build two new Barrages—one near Kotri and the other at the northern extremity of the Province. A project Circle has been opened for preparing plans of these projects. Plans and estimates for the Lower Sind Barrage are ready. Indents for the plant, machinery and stores are under preparation and will soon be forwarded to the Government of India for obtaining priority for their immediate supply. This Barrage will irrigate an area of $2\frac{1}{2}$ million acres. The discharge of all canals will be about 50,000 cusecs. It is expected that work on this project will begin in November 1945.

2. Plans and estimates for the Upper Sind Barrage are under preparation. This project will not be started until the Lower Sind Barrage is completed. Therefore, the Upper Sind Barrage will not be started before the year 1948. The Lower Sind Barrage will give employment to about 2,000 skilled workers and 12,000 unskilled workers as well as 1,500 technical and clerical staff. This project is, therefore, an ideal one for employment of demobilised Service personnel of all types.

3. The removal of the Tando Masti Khan fall from Tando Masti Khan to mile 4 below the head regulator of the Rohri Canal is necessitated by water-logging in Khairpur State. By removing the fall the water level in the Rohri Canal in the length of 21 miles will be lowered by 10 feet. This is the only remedy for the water-logging in Khairpur State. At the new fall, it is proposed to instal a hydro-electric generating station and use the current within a radius of roughly 50 miles from the fall (*vide* scheme No. 6 at pages 43-49 of Part II of this publication).

4. There are many other small irrigation schemes proposed to be carried out after the end of the war. It is also proposed to undertake a survey of the areas susceptible to lift irrigation in riverain areas. The use of barge pumps to overcome the difficulties of silting and of shifting river banks is also receiving consideration.

5. Full details of the scheme are given the Narrative printed at pages 65-68 *ibid*). The schemes under this heading have been assigned the top-most priority.

CHAPTER VIII.

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OTHER PUBLIC WORKS.

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The execution of the post-war development plans require the construction of a large number of buildings for a variety of purposes such as hospitals, schools, colleges, hostels, offices, residences, etc. Considering the amount of building work which has to be done and the limiting factors of finance and materials, it will be imperative to build on the most economical plan consistent with reasonable stability and sound design. Simplicity, combined with a pleasing appearance will have to be the watch-word.

2. Schemes under this heading have not yet been prepared in the prescribed form ; in fact it is not possible to do so until after the individual schemes under the other headings of development have been finally approved. After this is done, it will be possible to visualise the picture of the whole building programme, and then to draw up the schemes in the formal manner. For further particulars, reference is invited to page 69 of Part II of this publication.

CHAPTER IX.

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AGRICULTURE (INCLUDING VETERINARY, LIVE-STOCK,
LAND DEVELOPMENT, ETC.).

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A—Agriculture.

“Agriculture must take a high place perhaps the highest place of all—in our plans for the development of India after the War. Unless we succeed in raising substantially the standard of living in our villages, not only for the small farmers but for all who make their living on the land, India cannot become a wealthier or healthier or a better educated country.”

His Excellency the Viceroy, Lord Wavell.

Agriculture being the mainstay of the vast bulk of the population of this province, its extensive development must be placed in the forefront of every Plan. Broadly speaking, the Agricultural problem in Sind as in other parts of the country, is to increase the volume and to improve the quality of agricultural produce. The Agricultural Plan for Sind consists of thirty-two schemes (printed at pages 70-149 of Part II of this publication), and its objectives are explained in greater detail in the relevant Narrative (printed at pages 152-167 *ibid*). The Plan is based on the All-India Plan drawn up by the Imperial Council of Agricultural Research. In the order of priority, the Agricultural Plan has been assigned the third place, the first two having been assigned to “Irrigation” and “Roads”, respectively.

2. The principal aims of the Plan are to increase the average yields of long staple cotton, wheat and rice, increase the supply and improve the quality of draught and milch cattle, bring waste land under cultivation, and reclaim land now going out of cultivation on account of the injurious alkali affection. Complementary to these aims are the schemes for encouraging the growth of fruit and vegetables, extensions of green manuring and the growth of cattle fodders. Emphasis is laid on the training of an efficient staff for the Agricultural Department, and the development of Agricultural Engineering demonstration and research. The total expenditure involved in the execution of the schemes comes within the neighbourhood of ten crores of rupees.

3. The thirty-two schemes in question fall under the following appropriate headings :—

A—Increased cultivation (including Grow More Food Schemes).

B—Agricultural research work and experimental Farms and Sub-Stations

C—Agricultural propaganda, demonstration and extension.

D—Improved seed (including building of Seed Stores) and extension of manuring.

E—Land improvement—*i.e.*, soil conservation, kalar reclamation, anti erosion measures, and survey of riverain areas and desert areas.

F—Agricultural Engineering development—*e.g.*, mechanical cultivation well and tank improvement, boring, etc.

G—Agricultural education and technical training.

H—Horticultural development and extension.

B—Veterinary.

4. Sind is an agricultural province and cattle play an important part in the life of the people. The Sind breeds are well known throughout India both for milk yields and for draught. It is, therefore, essential to make adequate arrangements for good breeding and protection of animals from disease. The most devastating diseases of farm animals common to Sind are rinder-pest and liver-fluke both of which are subject to control. Foot and mouth disease is more wide-spread but it is not subject to control, though fortunately it generally occurs in a non-virulent form and deaths are relatively few. The other major diseases include T. B., mastitis and contagious abortion. The improvement of live-stock depends firstly on better breeding and feeding, and secondly on the provision, on a more extensive scale, of veterinary aid to control outbreaks of diseases and to attend to ordinary cattle ailments.

5. It is proposed to increase the activities of the Veterinary Department by opening additional Veterinary Dispensaries as well as travelling dispensaries. But the present difficulty of securing the staff limits the rate of expansion. This difficulty is proposed to be remedied by Scheme No. 44 (printed at pages 147-149 of Part II of this publication).

6. The Province is now almost entirely dependent on the research work conducted at the Central Institutes at Muktesar and Izatnagar with the result that local problems of animal diseases and health are left uninvestigated. It is, therefore, proposed to recognise and strengthen the Veterinary Laboratory, Karachi, in order to provide the necessary arrangements for research, etc.

CHAPTER X.

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FORESTRY.

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Forests are a natural asset on which a country largely depends for its economic and industrial development. Forests also play an important part in regulating the climate and even the physical features of a country. Forest policy in India has, therefore, two aims—the first to ensure that the areas necessary to preserve the general climatic and physical features of the country are kept as forest, and the second, to see that the amount of forest necessary for the Country's developing needs is preserved or created.

2. A plan for the development of Forests and Woodlands in Sind will shortly be ready. Its structure will be built on the foundations of Mr. Petty's note, extracts from which will be found at pages 170 to 184 of Part II of this publication.

3. The Provincial Plan is predominantly agricultural. A Plan of afforestation is an indispensable adjunct of any such Plan. In the past the systematic exploitation of the forests and their regeneration to maintain a sustained supply of the forest conditions were regulated by the Working Plan prepared by the Forest Department. Since the war, however, the unprecedented demand for timber for Defence purposes and for fire-wood and charcoal to meet the heavy military and civil demands has resulted in over fellings in several parts of the Province.

4. The area under forests is now seriously below all accepted standards of afforestation. Moreover in individual areas of the Province deterioration in tree growth is fraught with serious consequences such as acute shortage of fuel and encroachment of the desert. The Plan will therefore, aim at increasing the area under forests to meet both present needs and the needs of areas to be developed by irrigation, and also at restoring areas where tree growth has either disappeared or is in the process of doing so.

5. The target is fixed at 600,000 acres of land to be turned into forest. Of these over four lakhs of acres will be from the waste land (including hill areas), about one and half lakhs of acres will be Irrigated Plantations to be established when the two new Barrages begin to function, and about half a lakh of acres is proposed to be afforested in the desert area.

6. The afforestation of such large areas of land will necessitate the strengthening of the Forest Department, and this raises the question of training of the staff which will find a prominent place in the Plan. In other words more money will have to be spent on the Department and less land sold to the public. Forest resources have to be husbanded and restored, and the Department will have to be regarded as something other than a source of revenue. In the order of priority, Government has bracketted the Forestry Plan with that of Agriculture, next only to "Irrigation" and "Roads".

CHAPTER XI.

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FISHERIES.

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Even though sea coast of this Province is small, the marine fisheries are considered to be very good. These fisheries are not well exploited at present; still considerable quantities of sea fish are exported from Sind to other provinces. Fishing in river Indus and inland lakes like Manchur lake is also very important. Practically no attention has been paid to the development of fisheries by the Government till now. In 1944 a Fisheries Expert was appointed and he has since been engaged in making a survey of the fisheries of the Province. His report will be out shortly and it is hoped to include relevant extracts from it in the second edition of the Plan. Indications are available of the lines on which fisheries of the Province can be developed. The fishermen do not exploit at present more than a few miles of the sea from the coast. The Fisheries Department is planning to investigate the possibilities of deep-sea fishing. In other countries like Japan, Denmark and England fishermen go many miles out into the sea and their catches are considerably larger than what could be obtained from shore-fishing. There is every reason to expect that deep-sea fishing in Arabian sea will be equally productive.

2. Considerable quantities of fish caught from the sea as well as inland waters are salted and dried and exported to other Provinces and Ceylon for consumption. The methods of salting are rather crude and in some places unhygienic. The Fisheries Department propose to introduce improved methods which will (a) reduce the cost of drying and (b) improve the quality of the product so that it will fetch a better price. The increased production of Oysters, improvements in drying of prawns, development of a smoked fish industry, and preparation of fish manure and fish-meal are some of the other activities in which the Fisheries Department proposes to engage itself.

3. It is proposed to develop inland fisheries by establishing hatcheries, raising young fish and releasing them in the inland waters. Research work both in inland and sea fisheries will be undertaken. A Marine Aquarium is proposed to be set up in Karachi.

4. It is well known that the fishermen of this Province are very backward and live in deplorable conditions. It is proposed to open special schools for them and appoint a Marketing Officer who would introduce better methods of marketing fish so that the income of the fishermen may be increased. Already one Co-operative Society for the fishermen has been established in Karachi. Provision of cold storage facilities both at Karachi and for transport to up-country places is also under consideration.

5. For the phased programme of work, please see pages 231-232 of Part II of this publication.

CHAPTER XII.

CO-OPERATION.

The Co-operative Movement was started in the Province in 1904. It has not prospered much. The Agricultural Credit Societies found themselves in trouble due to their inability to recover loans given to the members. The Registrar Co-operative Society has been paying special attention to this problem and there has been some improvement in recent years. The Housing Societies in Karachi and Hyderabad have done well. Co-operative Banks both urban and rural are also doing well.

2. A number of consumers societies have recently been started mainly to solve the difficulties arising from the rationing and short supply of various articles. It is yet to be seen whether the consumers co-operative movement will survive the return of normal conditions in trade.

3. It is doubtful whether with the prevailing system of land tenure, *viz.*; that of annual tenancy, it is possible to have a comprehensive system of flourishing agricultural credit societies. The movement has practically not touched the problems of production and marketing. Two Weavers Production Societies started at Shikarpur and Hyderabad had to be wound up mainly due to lack of interest of the members.

4. The Co-operative Department has sent only three schemes to be included in the post-war plans. One is of land colonization. Co-operative farming has certain advantages over the system of farming prevailing in Sind at present. The cultivators will be part owners of the land and will feel more interested in the cultivation of their lands. Properly guided co-operative farming will give better results than individual farming. The small cultivator is everywhere less powerful than a bigger zamindar and the only way he can take his proper place in the agricultural economy of the Province is to unite with other small landowners in some organisation like the co-operative society planned in this scheme.

5. The second scheme is one for organisation of purchase and sale societies in the districts and for the organisation of a Provincial Marketing Society at Karachi. It has been mentioned above that the co-operative movement had not touched marketing till now. This is a welcome move from the Department and will result in increasing the incomes of zamindars. The elimination of middleman has always been one of the objects of the co-operative movement and such efforts are badly needed in a country like India. Marketing surveys conducted by the Government of India have shown that in the marketing of some commodities the producer gets less than 50 per cent. of the ultimate value of the commodity. If a co-operative organisation of producers can arrange for the marketing of the commodity, they would be in a position to secure a major portion of the 50 per cent. of the value of the commodity that is now appropriated by a chain of middlemen.

6. But the immediate task is to re-organize the Department in order that the various post-war schemes may be implemented properly through the agency of Co-operative Movement. With that end in view the Department was re-organized entirely, with effect from the 1st April 1945, involving an additional expenditure of Rs. 2,50,000 per annum and it is confidently expected that the Department will now play its legitimate role in the Post-War Planning.

CHAPTER XIII.

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INSTRUCTIONAL PROPAGANDA.

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No schemes under this heading have been prepared as yet. The form of schemes under this heading must necessarily be influenced by the Central Government's plan in this connection. Provincial arrangements will tend to supplement the Central Government's All-India propaganda drive.

2. As part and parcel of the aim of spreading the ideas of Post-War Development, an attempt will be made to create a better informed Government Service. If every Government Servant could be made to understand the aims and methods of Post-War Development, it is possible that this knowledge would be spread to every corner of the Province. This aspect of the problem is being studied by Government.

3. At present there are various departmental organizations for doing the work of publicity and propaganda. From experience, it is now possible to say that such separate departmental publicity should be given up, and all publicity co-ordinated under a properly qualified officer who should be equipped with a good reference library. It is proposed to select a suitable officer for this purpose and to depute him for training abroad in publicity for a period of about two years. Meanwhile, the Government of India have been approached to lend the services of a properly qualified Sindhi-knowing officer for a period of two years, but if they are unable to do so, the post may be advertised and filled on a contract basis for that period, until the officer sent on deputation comes back and assumes the charge of Director of Publicity.

CHAPTER XIV.

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RURAL UPLIFT AND VILLAGE AMENITIES.

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All attempts at rural uplift, village improvement or any other name which might be assigned to efforts towards improving the standard of living outside the towns, are frustrated by the absence of organised village life. This lack of village organization is largely due to the system of land tenure. This is only one of several reasons, but the fact remains that there has been a tendency towards dispersal rather than towards concentration. There is a marked preference for building a few huts on any open land and calling it Own Village rather than to live in more substantial villages with other people. This dispersion creates a number of serious problems in regard to law and order, education and public health. There is no easy or immediate solution to this problem, but until this tendency is checked and a reverse tendency towards concentration has been established, all efforts at uplift must be of very limited effect. The development of rural communications is intimately bound up with the problem of rural uplift to secure easy approach to the villages and to enable the villager to come to the larger centres of rural life without having to make such a visit an expedition.

2. The schemes included in the plan will show that the problem of rural improvement has three aspects, *viz.*, (a) provision of better health facilities including a good water-supply, (b) provision of increased facilities for education, and (c) improvement of the economic condition of the villagers. Adequate staff, their proper training and a comprehensive programme are the essential factors in the execution of any plan of rural uplift. These have been provided in the scheme.

CHAPTER XV.

"EDUCATION (INCLUDING TECHNICAL EDUCATION)."

The five-year plan seeks to tackle education as a whole, from the Primary to the University stage; its limitations are only those that arise out of the magnitude of some of its problems and relate more specially to finance and the training of teachers. Though education has made marked and rapid progress in recent years, primary education and particularly the education of girls still lags far behind the requirements of this Province. For post-war development, therefore, it will be necessary to raise the educational level of the people. The major portion of the population lives in villages, and for that matter small villages, and special attention will have to be paid to the village school if any progress is to be made.

2. All the educational post-war reconstruction schemes, therefore, centre round the main scheme for the introduction of free and compulsory education in as large an area of the Province as possible. Compulsory free primary education was first introduced in six talukas and is being extended to six more talukas in the year 1945-46. Scheme No. 72 (printed at pages 273-274 of Part II of this publication) will embrace eighteen more talukas, with the result that at the end of the quinquennium, compulsory education will have been applied to 30 out of 61 talukas, *i.e.*, half of the Province.

3. The progress of the scheme of compulsion will depend upon the rate at which it will be possible to train teachers. It is proposed to open two training schools (in addition to the Training College for Men at Hyderabad) and also to attach such training classes to three Government High Schools so that when the general scheme is put into operation a certain number of trained teachers may be available for the expansion of education.

4. With the introduction of compulsion, the pressure on secondary education is bound to grow. It is, therefore, proposed to open four more High Schools during the quinquennium and also to take over two middle schools from local or private bodies and eventually to raise them to High Schools. The plan also envisages the establishment of a Secondary Teachers Training College in order to provide the necessary facilities for the training of teachers.

5. By far the most pressing need of the Province is the education of girls after the elementary stage. It is proposed to open two Middle Girls Schools every year eventually to be raised to High schools. To encourage headmasters of Boys Schools in areas not served by Girls Schools, to enrol girls in their schools, a bonus is proposed to be offered to the headmasters.

6. In order that the work of the schools may be brought into closer touch with the everyday life of the village, it is proposed to open eight Residential Rural Middle schools teaching up to the fourth Standard English with agricultural and vocational bias. It is hoped that in future all first grade Primary schools will be of this type and the agricultural bias schools will be the 'Basic' schools of the Province.

7. Proposals regarding higher education in subjects such as Technical, Agriculture and Veterinary, etc., are dealt with in the schemes under the appropriate headings. In the order of priority, the post-war plan on Education has been bracketted with that on "Public Health and Medical Services", and assigned a place after "Agriculture" and "Forestry".

CHAPTER XVI.

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PUBLIC HEALTH AND MEDICAL SERVICES.

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The Plan under this heading of development as prepared by the respective Heads of Medical, Public Health and Public Health Engineering Departments, together with its narrative of objectives is printed at pages 286-406 of Part II of this publication. These schemes have necessarily had to be prepared before these Departmental Heads had the opportunity of studying the report of the Government of India's Health, Survey and Development Committee. Therefore, apart from the general modifications which Government may consider necessary to make in the thirty seven individual schemes, it will be necessary to modify them further in the light of what may be recorded in the Bhore Report.

2. Whatever shape the Plan under this subject may finally take, it will be essential to prepare a comprehensive and coordinated Plan for both Medical and Public Health Departments, in order to ensure a reasonable standard of health for the people of the Province, and to provide against the loss of effectiveness and the waste of effort and resources which inevitably follow from the overlapping of services and lack of co-ordination. The Plan must also be related to the past experience, the present position, and the ultimate organization contemplated. One thing is clear, namely that some of the schemes included in the Departmental Plan have inevitably to be spread over two—or possibly three—five-year periods, as they are too vast to be implemented throughout the Province within a space of five years with the help of the available expert or specialized staff. In rural areas the scattered character of population and lack of good communications and quick transport present additional difficulties.

3. As regards the water-supply and drainage schemes which are to be financed by the local bodies concerned, the immediate necessity is to determine a policy for aiding or compelling them to act up to their responsibilities and to advise and aid them in securing the necessary labour and materials.

4. Lastly, plans and estimates pertaining to scheme No. 114 were prepared long ago, and it is certain that their complete revision will be necessary, before any work can be undertaken. This will involve strengthening of the Department of the Consulting Public Health Engineer, and this question is being considered separately.

5. In the order of priority, this Plan has been assigned a place after "Agriculture" and "Forestry" and above "Industries and Industrial Training".

CHAPTER XVII.

HOUSING AND TOWN PLANNING.

The accumulation of dwellings and the concentration of population in relatively small areas give rise to acute problems of conservancy and water-supply. Few of these areas have local authorities which command sufficient revenues to employ competent civil engineers, let alone to put in train the necessary capital works for providing adequate arrangements. Therefore, the revenues of these local authorities must be augmented by new taxation, before they entitle themselves to any further grant-in-aid from Government. The Plan under this heading provides for (1) the constitution of a Provincial Town Planning Advisory Committee, and (2) the reorganization of the Town Planning and Valuation Department.

2. About a quarter of the Province's total population lives in the principal towns of the Province and the migration from rural to urban areas has been more rapid in recent years. The towns in Sind as in most other places in India have grown haphazardly without an eye to the future. Expansion of the towns has mainly been the result of private enterprise and speculation. The Advisory Committee will prepare preliminary reports on the future requirements of the towns. The work of this Committee will add considerably to the work of the office of the Consulting Surveyor to Government which will require expansion. Hence the necessity for the reorganization of the Town Planning and Valuation Department.

3. On account of the various reasons, *e.g.*, insecurity of life in rural areas, better means of livelihood available in the towns, the population of the towns, particularly the district headquarter towns, is ever on the increase. Scheme No. 117 (printed at pages 412-413 of Part II of this publication), therefore, provides for the expansion of all towns having a population of 10,000 and over, on orderly lines. The scheme is to be so arranged as to pay its way. Further, in order to relieve congestion and to provide houses worthy of human habitation for the poor working classes, Scheme No. 118 (printed at pages 414-415 *ibid*), proposes to introduce subsidised housing for them. Government assistance is needed in providing land at rates which will not force the rents up.

4. Possibly, the best approach to the solution of this extremely difficult problem would be through schemes of a concentrated area type covering an area of a taluka or a revenue sub-division. Such schemes aim at evolving a suitable lay-out, a village organization of committees or panchayats with recognized officials to manage lighting, conservancy and elementary law and order. All such schemes must take into account local conditions. No stereotyped lay-out can succeed if it is imposed in defiance of the lie of the land, and no standard house will be suitable if the materials available and climatic considerations are ignored, let alone the cost of construction. The prevalence of "kacha" houses is due to other reasons besides cost, and the evolution of a suitable type of house which combines shelter from heat as well as rain and easy repairs is a matter for the earliest consideration.

5. The introductory note refers to the future growth of the city of Karachi. Scheme No. 119 (printed at pages 416-417 *ibid*) provides for the constitution of an Improvement Trust for the city. The question is being examined by Government in consultation with the Informal Committee for Greater Karachi and the local interests affected by the proposal.

CHAPTER XVIII.

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LABOUR AND LABOUR WELFARE

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Labour in the larger towns of Sind for the most part comes from areas outside the Province. The average rate of wages is higher than that prevailing in most other provinces. But if there is any serious industrial expansion, it will be necessary to increase the staffs of both the Commissioner of Labour and the Chief Inspector of Factories. Even now, the Factory Inspection Department is inadequately staffed for the efficient enforcement of such enactments as Factories Act and the Payment of Wages Act. The Chief Inspector is an enforcement officer, and the Commissioner of Labour's duties are complementary. As the Royal Commission on Indian Labour observed no enforcement or control can be effective without knowledge of the facts. It is the primary duty of the Labour Department to ascertain facts, marshal them and advise Government.

2. Labour Welfare is intimately connected with such subjects as Public Health, Housing and Town Planning and Rural Uplift, since there is no valid reason why agricultural labour should not come within the purview of this subject. No schemes which fail to take into consideration the special needs of labour can be wholly successful. For, while it is undesirable to encourage the labourer to consider himself as one of a class apart in the present stage of social development in India, the manual labourer at any rate is largely inarticulate.

3. A town plan which fails to make provision for houses in which workmen can afford to live, defeats itself, as hovels will spring up adjoining the new town. A scheme for spreading education which does not site schools where workmen's children can easily attend, will fail to tackle illiteracy in its principal stronghold.

4. A pressing need is for the organization of leisure. The Factories Act restricts the hours of work, but no serious attempt has been made to make the extra hours of leisure gained worthwhile. The provision of free libraries and centres of recreation must find a place in the plan for Sind. As yet there is no evidence to warrant the supposition that the initiative in these matters will come from labour itself. Government will have to take the initiative and expect no return beyond the advantage of having a healthy and intelligent labour force with an interest in increasing production and in being good citizens, rather than a rabble or a mob. With this object in view, Government opened two Labour Welfare Centres in Karachi in 1942. In order that these centres may become more popular with labour and are run efficiently, Government are considering the question of transferring the management of the centres to the Karachi Municipal Corporation. Government have also agreed to the scheme of increasing the number of centres at Karachi from 2 to 6 and to the opening of 2 such centres in the town of Hyderabad and 2 in the Sukkur District—one at Sukkur and one at Rohri.

5. Since Sind separation, Labour matters form part of the work allotted to the Political and Miscellaneous Department (Miscellaneous). As labour work is on the increase, Government have decided to open with effect from 1st April 1946, a separate Labour Branch in the Political and Miscellaneous Department to deal with this work. The Branch will consist of 1 Superintendent, 3 Assistants, 3 Clerks, 1 typist and 1 peon. To begin with, the Labour Branch will function with only 1 Assistant, 1 Clerk and 1 typist.

CHAPTER XIX.

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SCIENTIFIC RESEARCH.

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No schemes have been prepared under this subject. It is not possible to forecast at this stage what policy the Government of Sind wish to pursue in this matter.

CHAPTER XX.

FINANCE.

The financing of the schemes in the post-war Plan will require serious consideration. In fact, the availability of funds will be the main factor in deciding how many schemes should be selected for inclusion in the Plan. There are in all 122 schemes in this Plan. Some more schemes are yet to come, e.g., under Forestry. The total cost of these schemes for the first five-year period will be 35 crores capital and 11 crores recurring. The two major items of (i) barrages, and (ii) roads will cost 25 crores capital and 1 crore recurring in the first five-year period. (These two items will cost 18 crores capital and 4.6 crores recurring in the second five-year period.) With an allowance for the plans still to be received and for changes in the present ones, it can be estimated that the total cost of the plan over the first five-year period will be 50 crores. This works out to an average expenditure of 10 crores in a year, though actually the expenditure will be much less in the first year, and it will progressively increase in the next four years. The expenditure comes to Rs. 22 per head of population per year.

2. Estimates of funds available and likely to be available have been made as follows :—

(i) *Accumulated balances with the Sind Government including Post-war Development Fund,*

This will be about $8\frac{1}{2}$ crores at the end of the financial year 1945-46.

(2) *Annual surplus with the Sind Government in the next five years.*

Allowing for a likely fall in prices of agricultural products, availability of funds from Land Revenue Equalisation Fund, higher excise receipts than was the case before the war, and some expansion in the administrative organisation, the surpluses over the next five years will not be more than 4 crores.

(3) *Grants from the Government of India and the Punjab Government.*

The Punjab contribution is still under dispute. The amount of compensation that will be paid by Punjab cannot be forecast now. The Government of India is expected to give a capital grant of about four crores for the Post-war Plan. It is likely that they may make a recurring grant also, but no figures have been mentioned by them.

(4) *New taxation.—*

The scope for this is limited in a backward province like Sind. Not more than 50 lakhs a year can be expected from this source.

(5) *Loans.*—

Items 1 to 4 will give us 17 crores plus the Punjab contribution plus possible central recurring grants. Over half the Plan will thus have to be financed by loans which will bring further problems in the recurring cost of servicing. The barrages can probably service their own debt, and for this reason it may, perhaps, be considered desirable to take them out of the general Plan altogether. If the Road Plan also receives special consideration about its finance, then we will have an estimated fund of about 20 crores to spend on a Plan costing us 25 crores.

List of the individual Post-War Development Schemes under the various headings of development incorporated in the first edition of the Five-Year Plan for the Province of Sind.

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Serial Number of the scheme.	Description of the scheme.	Approximate cost of five-year plan in thousands.		Category of scheme (viz., special priority, All province, etc.)	Special remarks, if any.
		Capital.	Recurring		
1	2	3	4	5	6
	<i>I—Re-settlement and re-employment.</i>	Rs.	Rs.		
		No Schemes.			
	<i>II—Industries and Industrial Training.</i>				
1	Development of cottage and small-scale industries.	2,73	8,18	All province.	
2	Expansion of technical training.	8,49	5,10	Special priority.	
3	Expansion of the office staff.	Nil.	29	} Particular area.	
4	New building for the Industries Department.	2,00	Nil.		
	Total ..	13,22	13,57		
		26,79			
	<i>III—Roads.</i>				
5	Construction of Roads ..	10,00,00	* 62,00	All province.	*This represents the total cost for the last two years at the rate of Rs. 31,00,000 per annum, the expenditure during the first three years on the maintenance of roads being practically nothing.
	Total ..	10,00,00	62,00		
		10,62,00			
	<i>IV—Road Transport.</i>	No Schemes.			
	<i>V—Electric Power Development.</i>				
6	Hydro-electric generating station on the proposed new Fall at mile 2 of Rohri Canal.	1,20,00	*11,50	Special priority.	*Recurring expenditure at the rate of Rs. 7,50,000 per annum will commence only after the work has been completed.
	Total ..	1,20,00	11,50		
		1,31,50			

1	2	3	4	5	6
		Rs. :	Rs.		
	<i>VI—Mining Development.</i>	No Schemes.			
	<i>VII—Irrigation, Waterways and Drainage.</i>				
7	Protective Irrigation Projects—				
	Part I—Lower Sind Barrage (Hajipur Barrage).	12,00,00	* 24,00	Special priority.	*The corresponding figure of Rs. 1,20,00,000 shown in the key statement at page 64 of part II of this publication meant to indicate the estimated expenditure for five years at the rate of Rs. 24,00,000 per annum, but the recurring expenditure will be incurred only in the fifth year after the Barrage is constructed.
	Part II—Upper Sind Barrage (Gudu Barrage).	3,00,00	Nil.		
8	Remodelling Rohri Canal (Dismantling the present Tando Mastikhan Fall at Mile 22 of Rohri Canal and constructing a new Fall at mile 2).	1,00,00	Nil.		
	Total ..	16,00,00	24,00		
		16,24,00			
	<i>VIII—Other Public Works.</i>	..	..	....	The expenditure has not been worked out.
	<i>IX—Agriculture (including Veterinary, Live-Stock, Land Development, etc.)</i>				
	<i>A—Agriculture—</i> <i>(i) Post-war Schemes.</i>				
9	Increased cultivation of pulse crop in rice areas	Nil.	59,25	Particular area.	
10	Increased cultivation of cattle fodders.	Nil.	20,50	All province.	*This also includes Rs. 20,000 on account of the staff, etc., which has not been included in col. 4 against entry No. 11 at page 150 of Part II of this publication.
11	Increase in oil seeds area	Nil.	* 4,36		
12	Kalar Reclamation ..	Nil.	80		
13	Survey of areas in Kohistan for anti-erosion work, construction of tanks and tube wells.	Nil.	58	Particular area.	
14	District Experimental Farms.	1,50,00	1,80,00	All province.	
15	Survey of Riverain areas	Nil.	50	Particular area.	
16	Manuring of crops ..	75	4,50	Special priority.	
17	Cotton seed distribution..	15	1,60,00	All province.	

1	2	3	4	5	6
		Rs.	Rs.		
18	Seed production, green manures, pulse and tobacco.	Nil.	24	Particular area.	
19	Building of Seed Stores ..	12,00	50	All province.	
20	Organisation of local manufacture of agricultural implements.	1	30	Special priority.	
21	Running of tractors by Government on zamindari lands on hire.	17,00	17,75	All province.	
22	Opening of 8 tractors servicing and repairing stations.	4,00	6,20		
23	Training of tractor drivers and mechanics.	Nil.	1,15	Special priority.	
24	Transfer of Agricultural College to Hyderabad.	9,00	17,40		
25	Experimental sub-stations	29,00	27,50	All province.	
26	Survey of desert talukas for construction of tanks.	Nil.	75	Particular area.	
27	Conservation of hay in desert talukas.	1,30	2,50		
28	Creation of a post of Animal Husbandry Professor in the Agricultural College.	Nil.	35		
29	Re-organisation of Agricultural Economics Section.	1	1,20	All province.	
30	Training of malhis ..	81	1,70	Special priority.	
31	Supply of sprayers and insecticides to cultivators.	75	60		
32	Post-graduate training of staff.	Nil.	4,70	Special priority.	
33	Re-organisation of Publicity Section.	1,60	4,70		
34	Extra-staff that will be required for administrative organisation under the post-war reconstruction.	Nil.	2,50		
	Total of IX-A (i) ..	2,26,38	5,20,53		
		7,46,91			

1	2	3	4	5	6
	(ii) <i>Grow More Food Schemes.</i>	Rs.	Rs.		
35	Additional staff required	1,91	30,79	} Special priority.	
36	Training of Additional staff.	4,22	7,17		
37	Seed multiplication and distribution of food crop.	Nil.	46,15		
38	Manuring of crops ..	Nil.	10,91		
39	Digging of wells for irrigation.	Nil.	7,50		
40	Wheat drilling demonstration.	Nil.	1,04		
41	Development of fruits and vegetables.	Nil.	1,86		
	Total of IX-A (ii) ..	6,13	1,05,42		
		1,11,55			
	Total of IX-A—(Agriculture).	2,32,51	6,25,95		
		8,58,46			
	<i>B—Veterinary.</i>				
42	Animal diseases control and treatment of sick animals.	22	10,65	} Special priority.	All province.
43	Veterinary Research ..	1,50	3,77		
44	Education and training ..	Nil.	80		
	Total of IX-B—(Veterinary).	1,72	15,22		
		16,94			
	Grand Total of IX— (Agriculture and Veterinary).	2,34,23	6,41,17		
		8,75,40			
	<i>X—Forestry.</i>	..	..	..	As the schemes in the prescribed form are not yet ready, estimate of the expenditure cannot be given.
	<i>XI—Fisheries.</i>				
*45	Development of Edible Oysters.	4	24	Special priority.	* This scheme has already been sanctioned and actually put into operation.
†46	Development of Prawn Fisheries.	8	72	Special priority.	† This scheme has since been sanctioned, and will be put into operation with effect from the year 1946-47.
47	Manufacture of fish guano and fish meal.	10	1,09	} All province.	
48	Stabilising the Fishing Industry.	1	40		
49	Construction of Fish Curing Yards.	66	3,18		

1	2	3	4	5	6
		Rs.	Rs.		
50	Deep-Sea Fishing (Pro- liminary).	7,56	13,51	} Particular area	
51	Deep-Sea Fishing (Sup- plementary).				
52	Fish Cannery ..	2,30	12,85		
53	Provision of a Marine aquarium.	1,80	62		
*54	Construction of Smoke Demonstration Houses	2	51	All province.	
55	Scheme for the Palla (Hilsa) Hatchery.	19	38	Particular area.	
	Total ..	12,76	33,50		
		46,26			
	<i>XII—Co-operation.</i>				
56	Land Colonization ..	..	..	Particular area.	Cost not worked out.
57	Co-operative Purchase and Sale Societies.	2	1,87	All province.	
58	Re-organisation of the Co-operative Depart- ment.	Nil.	12,50	Special priority.	
	Total ..	2	14,37		
		14,39			
	<i>XIII—Instructional Pro- paganda.</i>	No Schemes.			
	<i>XIV—Rural Uplift and Village Amenities.</i>				
59	Re-organisation of the Rural Reconstruction Department.	16	6,24	} All province.	
60	Village Water Supply ..	3,79	6,76		
61	Circulating Libraries and Reading Rooms.	1,17	67		
62	Village Medicine Chests ..	52	1,20		
63	Training of Organisers ..	6	61		
64	District Museums ..	40	59		
65	Weekly Newspapers ..	Nil.	42		
66	Bee-keeping ..	50	30		
67	Wireless Broadcasting ..	2,08	1,18		
68	General programme of village improvement.	1,12,90	37,56		
	Total ..	1,21,58	55,53		
		1,77,11			

* This scheme has since been sanctioned and will be put into operation with effect from the year 1946-47.

Cost not worked out.

1	2	3	4	5	6	
		Rs.	Rs.			
	<i>XV—Education (Including Technical Education).</i>					
69	Training Schools with hostels for Primary Teachers.	27	3.05	} Special priority.		
70	Training Class with a hostel at each of the Government High Schools for trainees.	25	2.40			
71	Opening of eight Residential Rural Middle Schools.	7.08	10.08	} All province.		
72	Free and compulsory Elementary Education.	1.83	12.60			
73	Expansion of Girls' Education.	Nil.	40			
74	Taking over by Government of Non-Government Middle Schools.	19	1.01			
75	Establishment of the Middle Girls Schools in each district.	90	2.60			
76	Training of Secondary Teachers.	20	1.75	Special priority.		
	Total ..	10.72	33.89			
		44.61				
	<i>XVI—Public Health and Medical Services.</i>					
	A—Medical Services.					
†77	Establishment of a Medical College.	17.11	8.59	} Special priority.	†The Medical College has since been established in June 1945.	
78	Re-organisation of the office of the Inspector-General of Civil Hospitals.	3	2.64			
79	Establishment of a Medical Engineering Department.	Nil.	2.90	All province.		
80	Establishment of a Central Preliminary School for Nurses.	1.50	1.97	Special priority.		
††81	Extension of existing hospital buildings.	13.68	Nil.	} All province.	††The relative priority of the various items included in the scheme will be determined later.	
82	New Buildings Projects..	23.50	Nil.			

1	2	3	4	5	6
		Rs.	Rs.		
83	Training of Midwives ..	2,00	2,20	} Special priority.	
84	Creation of a cadre of X-Ray and Laboratory Technicians.	Nil.	1,22		
85	Strengthening of the Hospital staff.	Nil.	20,10	} All province.	
86	Institutions of Honorary Medical Officers.	Nil.	1,44		
87	Establishment of additional dispensaries in rural areas and taking over of the Local Board Dispensaries.	26,65	38,77		
88	Conversion of dispensaries into Rural Hospitals.	Nil.	1,76		
89	Reconstruction of Hospital Buildings.	15,09	Nil.	} All province.	
90	Improvement of existing Hospital Buildings.	2,30	Nil.		
91	Establishment of Pathological Laboratories.	40	1,02		
92	Establishment of Dental, Eye and Venereal Clinics	30	92		
93	Establishment of a Central Laboratory.	10	2,40	} All province.	
94	Supply of additional equipment to the Medical Institutions.	8,95	Nil.		
95	Introduction of full-dieting in hospitals.	Nil.	5,40	} Special priority.	
96	Training in Pharmacy and Pharmaceutics.	Nil.	20		
97	Establishment of a College of Dentistry.	3,50	73	} All province.	
98	Provision of Telephones in the Medical institutions.	Nil	10		
* 99	Establishment of a Provincial Medical Stores Depot.	50	96	} Special priority.	*The details have been worked out in consultation with the Director General, I.M.S., Delhi. The working capital required for the purchase of the stores has not been included in the estimates.
100	Provision of Post-graduate study in the Foreign Countries.	Nil.	2,19		

I	2	3	4	5	6	
		Rs.	Rs.			
101	Establishment of an Ambulance Service.	80	61	All province.	† This institute will be attached to the Medical College (Scheme No. 77).	
102	Establishment of a Children's Hospital	1,50	2,40			
103	Establishment of a Tuberculosis Sanatorium.	2,00	3,23			
104	Establishment of Convalescent Homes.	2,75	1,80			
105	Establishment of Infirmaries.	5,00	3,00			
† 106	Establishment of a Radium Institute.	1,50	32			
107	Transfer of Sir C. J. Mental Hospital, Hyderabad to Karachi.	15,00	1,50			
	Total of A—Medical Services.	1,44,16	1,08,39			
		2,52,55				
	<i>B—Public Health Services.</i>					
108	District Health Staff ..	2,25	16,61	Special priority.		
109	Maternity and Child Welfare Centres.	10,39	19,51			
110	Epidemic Medical Officers' Unit.	1,28	3,15	All province.		
111	Field Investigation Unit..	51	64			
112	Nutrition Survey Unit ..	32	64			
113	Health Unit ..	50	69	Particular area.		
	Total of B—Public Health Services.	15,25	41,24			
		56,49				
	<i>C—Public Health Schemes of Local Bodies.</i>					
* 114	Improvement to drainage and water supply schemes.	1,06,00	Not worked out.	Particular area.	* Recurring cost will be worked out after detailed estimates are prepared. Schemes will be financed by the local bodies concerned either from their general funds or from the loans to be raised for the purpose. This scheme does not include the scheme of the Drainage of Artillery Maidan estimated to cost about one lac of rupees which will be financed by Government from the Provincial Revenues.	
	Total of C—Public Health Schemes of Local Bodies.	1,06,00	Not worked out.			
		1,06,00				
	Grand total for XVI—Public Health and Medical Services.	2,65,41	1,49,63			
		4,15,04				

1	2	3	4	5	6
		Rs.	Rs.		
	XVII—Housing and Town Planning.				
115	Constitution of a Provincial Town Planning Advisory Committee.	Nil.	10	} Special priority.	Details of the cost have not been worked out.
116	Re-organisation of the Town Planning and Valuation Department.	4	1,75		
117	Extension of District Towns in order to relieve congestion.	1,00,00	Nil.	} All province.	
118	Subsidised housing Scheme for the poor and working classes.	31,25	Nil.		
119	Constitution of an Improvement Trust for Karachi.	..	..	} Particular area.
	Total ..	1,31,29	1,85		
		1,33,14			
	XVIII—Labour and Labour Welfare.				
120	Opening of Labour Welfare Centres.	8	45	} Particular area.	
121	Appointment of a full-time Commissioner of Labour.	Nil.	44		
122	Opening of a Labour Department in the Secretariat.	Nil.	85	} All province.	
	Total ..	8	1,74		
		1,82			
	XIX—Scientific Research.	No	Schemes.		
	Grand Total ..	35,09,31	10,42,75		
		45,52,06			

Consolidated Key Statement of costs of Schemes under the various headings of development incorporated in the 'first edition of the Five-year Plan for the Province of Sind.

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Serial Number.	Subject of Development.	Approximate cost of five-year plan in thousands.		Total.	Remarks.
		Capital.	Recurring		
I	2	3	4	5	6
		Rs.	Rs.		
I	.. Resettlement and Re-employment.	No Schemes.			
II	.. Industries and Industrial Training.	13,22	13,57	26,79	
III	.. Roads	10,00,00	62,00	10,62,00	
IV	.. Road Transport ..	No Schemes.			
V	.. Electric Power Development.	1,20,00	11,50	1,31,50	
VI	.. Mining Development ..	No Schemes.			
VII	.. Irrigation, Waterways and Drainage.	16,00,00	24,00	16,24,00	
VIII	.. Other Public Works ..	..	..	....	Expenditure already included in the individual schemes concerned.
IX	.. Agriculture (including Veterinary, Live-stock, land development, etc.)	2,34,23	6,41,17	8,75,40	
X	.. Forestry .. ..	..	..	....	Schemes in the prescribed form are not yet ready.
XI	.. Fisheries	12,76	33,50	46,26	
XII	.. Co-operation	2	14,37	14,39	
XIII	.. Instructional Propaganda	No Schemes.			
XIV	.. Rural Uplift and Village Amenities.	1,21,58	55,53	1,77,11	
XV	.. Education	10,72	33,89	44,61	
XVI	.. Medical and Public Health Services.	*2,65,41	1,49,63	4,15,04	*Out of this amount Rs. 1,06,00,000 will be borne by the local bodies concerned, and the rest by Government.
XVII	.. Housing and Town Planning.	1,31,29	1,85	1,33,14	
XVIII	.. Labour and Labour Welfare.	8	1,74	1,82	
XIX	.. Scientific Research ..	No Schemes.			
	Total ..	35,09,31	10,42,75	45,52,06	

Note.—The above-mentioned estimates do not include the capital and/or recurring expenditure on account of the "Other Public Works", "Forestry", "Co-operation (Land Colonization)", "Medical and Public Health Services (Public Health Schemes of Local Bodies)", and "Housing and Town Planning (Improvement Trust for the City of Karachi)". In the circumstances, the total expenditure of Rs. 45,52,06,000 will go up at least to fifty crores which on an average will work out to ten crores per annum, or on the basis of *per capita* population to Rs. 22 per annum.

*Statement showing the comparative figures of expenditure during the period of War
and during the Post-war period under the various headings of development.*

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Serial No.	Heading of development.	Average expenditure of three years ending 1943-44.	Revised Estimates for the year 1944-45.	Budget Estimates for 1945-46.	Post-war quinquennium commencing from the year 1946-47.					Total.	Remarks.
					First year.	Second year.	Third year.	Fourth year.	Fifth year.		
In thousands.											
I	2	3	4	5	6	7	8	9	10	11	12
*I	Resettlement and Re-employment.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	*No schemes have been prepared under this subject.
II	Industries and Industrial Training.	1,51	2,42	1,94	17,88	4,65	4,66	4,65	4,65	36,49	†No schemes have been prepared under this subject; hence the budgetted provision of Rs. 51,000 for 1945-46 is repeated in the post-war quinquennium.
III	Roads ..	43,50	17,63	74,81	2,74,81	2,74,81	2,74,81	3,05,81	3,05,81	14,36,05	
†IV	Road Transport ..	31	38	51	51	51	51	51	51	2,55	
V	Electric Power Development.	60	80	81	30,81	30,81	30,81	30,81	12,31	1,35,55	
*VI	Mining Development ..	....	....	....	....	....	....	....	....	....
†VII	Irrigation, Waterways and Drainage.	68,72	1,70,32	1,20,01	4,60,01	4,60,01	4,40,01	4,20,01	4,44,01	22,24,05	‡The post-war expenditure represents mostly the capital and recurring expenditure over the two new Barages.
§VIII	Other Public Works ..	12,03	22,06	29,11	29,11	29,11	29,11	29,11	29,11	1,45,55	§Please see paragraph 3 of the note at page 69 of Part II of this publication.

I	2	3	4	5	6	7	8	9	10	11	12
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
IX	Agriculture (including Veterinary).	27.73	33.11	34.62	38.912	1,60,27	1,69,85	1,64,62	1,64,64	10,48,50	†Schemes under this subject are not yet ready, hence the budgetted provision has been repeated in the post-war quinquennium. But the expenditure on account of the post-war schemes is likely to be about four crores of rupees during that quinquennium.
†X	Forestry ..	5.04	12.91	16.28	16.28	16.28	16.28	16.28	16,28	81,40	
XI	Fisheries ..	3	19	18	11,28	5.34	12,87	8.81	8,86	47,16	
XII	Co-operation..	1.08	1.33	1.33	4.23	4.21	4.20	4.20	4,20	21,04	
§XIII	Instructional Propaganda	.....	.....	.....	.....	.....	.....	.....	.....	.....	§At present the work of propaganda and publicity is done by the various departmental agencies, hence it has not been possible to work out the exact expenditure incurred at present on this account. As regards the future, no schemes have been prepared as yet. Please see Chapter XIII of Part I of this publication.
XIV	Rural Uplift and Village amenities.	1.01	1.28	1.62	39.02	9.88	42,52	45.34	48,45	1,85,21	
XV	Education (including Technical Education).	33.97	48.04	53.13	55.64	55.10	62.16	66,43	70,93	3,10,26	
XVI	Public Health and Medical Services.	14.19	21.69	22.07	1,08,88	96,91	98,80	1,14,39	1,06,41	*5,25,39	*This includes the capital expenditure of Rs. 1,06,00,000 on account of the various water supply and drainage schemes which will be incurred by the local bodies concerned
XVII	Housing and Town Planning.	18	22	23	26.89	26,85	26,85	26,85	26,85	1,34,29	
XVIII	Labour and Labour Welfare.	10	23	8	50	43	43	43	43	2,22	

I	2	3	4	5	6	7	8	9	10	11	12
XIX	Scientific Research	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs. ..	Rs.	Rs. ..	
											†No schemes have been prepared under this subject
											*The abnormal expenditure during the first year of the quinquennium is due to the fact that most of the Capital expenditure is included in that year. But when the individual schemes are examined, care will be taken to see that non-essential works are postponed to the following years so as to spread the expenditure during each post-war year as evenly as possible
	TOTAL	2,09,55	3,32,61	3,56,73	*14,64,97	11,75,17	12,13,87	12,38,25	12,43,45	63,35,71	

Note (1).—For the purpose of working out the expenditure for the post-war quinquennium, the budgeted allotment for the year 1945-46 has been taken as the basic expenditure, and to it has been added the expenditure on account of the respective post-war schemes.

Note (2).—Out of the total expenditure during the quinquennium, Rs. 17,83,65,000 represents the basic expenditure, and Rs. 45,52,06,000 the expenditure on post-war plans. If we add the expenditure in respect of the schemes which have yet to be prepared—e.g., Forestry, etc., the total expenditure of post-war schemes will come to fifty crores.

PART II.

L (iv) 73

I—RE-SETTLEMENT AND RE-EMPLOYMENT OF EX-SERVICEMEN, (WHERE THE SCHEME IS SPECIFICALLY FOR THIS PURPOSE).

There is no particular scheme under this subject of development. Please see Chapter I of Part I of this publication.

II—INDUSTRIES AND INDUSTRIAL TRAINING.

1. Serial Number of Scheme ... I.
2. Name of Scheme ... Scheme for the development of cottage and small-scale industries.
3. Brief description of Scheme ... It is proposed to develop Cottage Industries like Handloom, Pottery, Lacquerware, Tanning, Sericulture, Bee-keeping, Fibre, Dyeing and Printing and Wool Spinning and Weaving. It is also proposed to organise fairs and exhibitions to popularise cottage industry wares and also to market these wares through Sales Depots or Emporia.
4. Area selected for application, if applicable. Whole province.
5. Time expected to be taken for execution ... Five years.
6. Brief details of staff required and how staff is proposed to be obtained ...
 - (a) *Head Office Establishment*.—
 1. One Superintendent for Cottage Industries.
 2. One Senior Clerk.
 3. One Accounts Clerk.
 4. One Junior Clerk.
 5. Two Peons.
 - (b) *Sales Depot Scheme*.—
 - (i) *Karachi*.—
 1. Sales Manager, Karachi.
 2. Production and Buyer Inspector.
 3. Shop Assistant.
 4. Accounts Clerk.
 5. Packer.
 6. Two Peons.
 7. Assistant for standardisation of cottage wares and development of export trade.
 8. One Junior Clerk.
 9. Artist Designer.
 - (ii) *Larkana, Hyderabad and Shikarpur*.—
 1. Manager.
 2. Three Sales Assistants.
 3. Three Peons.

The above staff would be recruited by advertisement wherever possible. In addition, the existing staff in the following schemes at present

operated by this department would also be entertained :—

1. Lacquerware.
2. Pottery.
3. Handicrafts School for Women.
4. Second Handicrafts for Women.
5. Tanning.
6. Fibre.
7. Dyeing and Printing.
8. Weaving Schools and Demonstration.
9. Wool Weaving and Spinning.
10. Wool Research Scheme.
11. Handloom Production Scheme.

7. Rough estimates of cost at existing rates:—

(i) Capital Rs. 2,73,100

(ii) Recurring Rs. 1,63,600 per annum.

8. Extent to which the scheme will be productive.

It is expected that the scheme would increase the output and the *per capita* income of those at present engaged on small scale and cottage industries.

9. Extent to which the scheme will cater for returned service personnel.

The staff required in the above schemes is mostly of a technical nature and will not generally cater for service personnel.

10. General description of plant, equipment or stores:—

(i) To be imported from abroad.

(ii) To be obtained in India

11. Labour force required in the case of the larger schemes.

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.

13. Brief indication where applicable of further development contemplated on the lines of the scheme in succeeding five year periods.

Nil.

14. Any other remarks or information.

1.	Serial No. of Scheme	..	..	2.	
2.	Name of Scheme	...	...	..	Scheme for the expansion of technical training.
3.	Brief description of Scheme	...	...	..	(a) It has been decided to take over the Victoria Technical Jubilee Institute, Sukkur under Government control. (b) It is proposed to over-haul the Halford Technical Institute, Jacobabad. (c) It is also proposed to start an up-to-date Technical Institute and combine it with the N.E.D. Engineering College, Karachi. (d) An Institute like the V. J. T. I., Sukkur, is proposed to be started at Hyderabad. (e) Three candidates are proposed to be sent every year to foreign countries for apprenticeship in Industrial Training.
4.	Area selected for application, if applicable	..	..	..	Whole Province.
5.	Time expected to be taken	..	..	..	Five years.
6.	Brief details of staff required and how staff is proposed to be appointed	..	..	..	(a) <i>Taking over control of V.J.T.I., Sukkur—</i> 1. Superintendent. 2. Mechanic. 3. Carpenter. 4. Turner. 5. Drawing Master. 6. Clerk. 7. Sweeper. 8. Peon. (b) <i>Re-organisation of Halford Technical School, Jacobabad.—</i> 1. Superintendent cum Foreman. 2. Workshop and General Assistant.

3. Blacksmith cum Foundry Man.

4. Helper cum Chowkidar

(c) *Technical Institute to be combined with the N.E.D. Engineering College.—*

Carpentry Shop—

Two Carpenter Mistries.

One Mate.

Smithy Shop.

Two Smiths.

Two Mates.

Foundry Shop.—

One Founder and Moulder.

One Mate.

Fitting Shop.—

Two Fitters.

Two Mates.

Machine Shop.—

One Machinist.

Two Turners.

Two Mates.

Wireless Operators and Radio Servicing.—

One Carpenter.

One Serviceman.

Two Assistants.

One Mate.

Automobile Mechanics and Electricians Course.—

One Mistry.

One Assistant.

One Electrician.

One Mate.

Wiremen's Course.—

One Supervisor.

One Wireman.

One Mate.

Welding and Electroplating.—

One Welder and Electroplater.

Carpentry and Cabinet Making.—

One Turner and Pattern Maker.

Architectural Draftsman's Course.—

One Head Draftsman.

One Assistant.

One Mate.

Instructors.

Four Lecturers for Mechanical and Electrical Engineering.

One Lecturer in Radio Engineering.

One Lecturer in Automobile Engineering.

General.

One Store Keeper.

One Clerk.

One Peon.

(d) *Technical Institute at Hyderabad.*

(1) Superintendent.

(2) Mechanic.

(3) Carpenter.

(4) Turner.

(5) Drawing Master.

(6) Assistant Carpenter.

(7) Assistant Mechanic.

- (8) Electrician.
- (9) Electroplater.
- (10) Accountant.
- (11) Clerk.
- (12) Sweeper.
- (13) Two Peons.
- (14) Gardener.

The existing staff will continue. The remaining staff would be appointed by advertisement wherever necessary.

(e) *Training.*

No staff.

7. Rough estimates of cost at the existing rates.

(1) Capital	Rs. 8,49,000
(2) Recurring	" 1,02,000 per annum.

8. Extent to which the scheme would be productive. The above scheme is expected to turn out skilled technicians.

9. Extent to which the scheme will cater for returned service personnel. It is expected that some posts of blacksmiths, etc.; could be filled from among the qualified returned service personnel.

10. General description of plant, equipment or stores.

- (1) To be imported from abroad. } Tools and equipment ordinarily required in a Technical School.
- (2) To be obtained in India. }

11. Labour force required in the case of the large schemes. No labour force is required.

12. Whether the assistance of the Central Government is likely to be required for obtaining material machinery or technical personnel. It may be necessary to seek the assistance of the Central Government, in procuring some tools and equipment.

13. Brief indication, where applicable, of further development contemplated on the lines of the scheme in succeeding five year periods. Nil.

14. Any other remarks.

NOTE :—The details of the scheme mentioned against (c) above are given in the statement at pages 8—12 post.

STATEMENT SHOWING THE DETAILS OF THE SCHEME FOR THE ESTABLISHMENT OF A TECHNOLOGICAL INSTITUTE AT KARACHI.

Laboratories and well equipped shops must necessarily be an essential feature of a good technical school. While they are essential, they are also the heaviest item of expenditure in any scheme for a Technical Institute. Such a scheme would therefore cost anything like five to six lacs of rupees on buildings and equipment.

2. The Engineering College serves the purpose of a technical school to a considerable extent. Besides the Degree courses in Civil, Mechanical and Electrical Engineering, it has also Diploma courses in these branches of Engineering and a Wireless Operators' course. Avoiding duplication of laboratories and workshops, and with an additional equipment costing about a lac of rupees, a Technical Institute could undertake the following useful courses for which there would be an immediate demand.

(1) DIPLOMA COURSES.

1. Diploma Courses in Mechanical and Electrical Engineering.
2. Wireless Operators' Course.
3. Radio Servicing Course.
4. Automobile Mechanics' Course.
5. Electrical Maintenance and Motor Car Electricians' Course.
6. Second Class Electrical Wiremen's Course.
7. First Class Electrical Supervisors' Course.
8. Welding and Electroplating Course.
9. Architectural Draftsmen's Course.
10. Carpentry and Cabinet Making.

(2) TRADE COURSES.

- | | |
|----------------|--------------------|
| 1. Turners. | 4. Blacksmiths. |
| 2. Fitters. | 5. Moulders. |
| 3. Machinists. | 6. Engine Drivers. |

3. The first two of these courses need very costly equipment of shops and laboratories and are already run by the Engineering College. They could be transferred to the Technical Institute to which they would properly belong. The scheme is thus a comprehensive one comprising the Engineering College and the Technical Institute. The essential feature of the scheme is that these two will be separate units housed in buildings of their own and served by a set of common workshops which will be sufficiently large and equipped to provide practical training for students of both the institutions.

(3) TECHNICAL INSTITUTE.

4. Besides the ten Diploma courses enumerated above, the Trade courses must form an important feature of the school. They entail no extra cost but will only mean the fullest possible use of the workshops. After the war, there is bound to be a considerable industrial development in the country and Sind must have its share. At the moment, Sind has a dearth of skilled workers and the Technical School must provide a steady stream of these through the Trade Courses.

5. The number of admissions, the standard of entrance, qualifications, the duration of course, the scale of fees etc., for all these courses are tabulated below.

Description of the Course.	Duration in years.	Standard of admission.	No. to be admitted.	Suggested scale of fees.
DIPLOMA COURSES.				
Diploma Courses in Mechanical Engineering	3	} Matriculation Certificate.	30	60
Diploma Course in Electrical Engineering	3		30	60
Wireless Operators	1½		30	50
Radio Servicing	1½		20	50
Automobile Mechanics	2	} Vith standard passed.	10	30
Electrical Maintenance and Motorcar Electricians	1		10	30
Second Class Electrical Wiremen	1	} Vth standard passed.	20	15
First Class Electrical Supervisors	2		10	25
Welding and Electroplating	1		10	25
Architectural Draftsmen	2		10	30
Carpentry and Cabinet making	2	IVth Standard passed.	10	30

Per term.

TRADE COURSES.

Turners	I	} Ability to read and write.	10	} Rs. 2 p m
Fitters	..	..	..	I		10
Machinists	..	..	..	I		6
Blacksmiths	..	..	..	I		6
Moulders	..	..	..	I		6
Engine Drivers	..	..	..	I		6
Total ..						234	

6. The school will thus provide technical courses for 234 entrants, every year of varying qualifications upto the Matriculation Certificate and will prove a boon to parents who cannot afford costly school and college education for their boys. When the school gets working to its full strength, considering the varying duration of the courses, it will have nearly 400 boys under training.

7. The details of additional equipment, workshop and teaching staff, will be as under :—

(4) EQUIPMENT.

	Rs.	a.	p.
Additional lathes and other machines for machine shop ..	32,000	0	0
Electrical Shop ..	10,000	0	0
Wireless Laboratory	10,000	0	0
Radio Servicing	3,000	0	0
Automobile Repairs Shop	10,000	0	0
Motor Car Electrical Wiring Shop	3,000	0	0
First and Second Class Wiremen's Laboratory ..	10,000	0	0
Welding and Electroplating	10,000	0	0
Wood-working, lathes, etc.; for cabinet making shop ..	5,000	0	0
Drawing tables, charts, etc., for Architectural Drafts- men's course	3,000	0	0
Models of machine parts, etc.	5,000	0	0
Total Rs.	1,01,000	0	0

(5) RECURRING EXPENDITURE ON STAFF, ETC.

	Rs.	Per mensem. Rs. a. p.	Per annum. Rs. a. p.
<i>Additional workshop staff—</i>			
Carpentry shop (100 boys) —			
Two Carpenter Mistries @ 45	90	0 0	
One Mate @ 20	20	0 0	
	110	0 0	1,320 0 0
<i>Smithy shop (100 boys) —</i>			
Two Smiths @ 50	100	0 0	
Two Mates @ 20	40	0 0	
	140	0 0	1,680 0 0
<i>Foundry shop (30 boys) —</i>			
One Moulder and Founder @ 60	60	0 0	
One Mate @ 20	20	0 0	
	80	0 0	960 0 0
<i>Fitting shop (100 boys) —</i>			
Two Fitters @ 50	100	0 0	
Two Mates @ 20	40	0 0	
	140	0 0	1,680 0 0
<i>Machine Shop—</i>			
One Machinist @ 75	75	0 0	
Two Turners @ 60	120	0 0	
Two Mates @ 20	40	0 0	
	235	0 0	2,820 0 0
<i>Wireless Operator and Radio Services—</i>			
One Operator @ 100	100	0 0	
One Service man @ 60	60	0 0	
Two Assistants @ 30	60	0 0	
One Mate @ 20	20	0 0	
	240	0 0	2,880 0 0
<i>Automobile Mechanics and Electricians' Centre—</i>			
One Master @ 100	100	0 0	
One Assistant @ 50	50	0 0	
One Electrician @ 60	60	0 0	
One Mate @ 20	20	0 0	
	230	0 0	2,760 0 0
<i>Welding Shop—</i>			
One Welder @ 100	100	0 0	
One Assistant @ 50	50	0 0	
One Mate @ 20	20	0 0	
	170	0 0	2,040 0 0
<i>Radio Servicing Shop—</i>			
One Radio Servicer @ 100	100	0 0	
One Assistant @ 50	50	0 0	
One Mate @ 20	20	0 0	
	170	0 0	2,040 0 0
<i>Model Shop—</i>			
One Model Maker @ 100	100	0 0	
One Assistant @ 50	50	0 0	
One Mate @ 20	20	0 0	
	170	0 0	2,040 0 0

<i>Carpentry and Cabinet Making.</i>				Rs.	Rs. a. p.	Rs. a. p.
One Turner and Pattern Maker ..	..	..	@	60	60 0 0	720 0 0
<i>Architectural Draftsmen's Course—</i>						
One Head Draftsman ..	..	..	@	100	100 0 0	
One Assistant ..	..	..	@	60	60 0 0	
One Mate ..	..	..	@	20	20 0 0	
					180 0 0	2,160 0 0
<i>Instructors—</i>						
Four Lecturers for Mechanical and Electrical Engineering ..	..	..	@	100	400 0 0	
One Lecturer in Radio Engineering ..	..	..	@	100	100 0 0	
One Lecturer in Automobile Engineering ..	..	..	@	100	100 0 0	
					600 0 0	7,200 0 0
<i>General—</i>						
One Store keeper ..	..	..	@	60	60 0 0	
One Clerk ..	..	..	@	45	45 0 0	
One Peon ..	..	..	@	20	20 0 0	
Total Rs. ..					125 0 0	1,500 0 0
Recurring Expenditure on Shops for materials and power ..					..	10,000 0 0
Total Rs. ..						38,440 0 0

8. To meet the recurring expenditure, the annual fee-receipts in the 1st, 2nd and 3rd year may be expected to be Rs. 17,000, 28,000 and 33,000 respectively. The deficit in the first year when the institute will be working at its part strength will, thus, be about Rs. 20,000 which will progressively diminish to about Rs. 6,000 per year. It will however be safe to assume that the institute will need a recurring grant of Rs. 20,000 per annum, taking into account the grade promotions of the teaching and workshop staff.

(6) BUILDINGS.

9. The Class room and other accommodation for the various courses has been carefully looked into, and the estimated cost of buildings will be as under :—

	Rs.
Main Building ..	1,00,000
Automobile repair and welding shops ..	10,800
Shed for stores ..	5,000
Furniture ..	10,000
Rs. 1,25,800	

The main shops for Smithy, Carpentry, Foundry, etc., will be common with those for the Engineering College and are to be taken up later.

(7) ENGINEERING COLLEGE.

10. The Civil Engineering Diploma course which is run by the College should continue to be looked after by the College. It will be cheaper and more economical to do so. That is the only Diploma Course that will be attached to the College which will now be free for doing degree and higher research work. As the Physics and Chemistry Laboratories of the D. J. Sind College will no longer be available, and as Diploma students will have some Physics and Chemistry to do, provision has been made for it. :—

11. Details of class-room and laboratory requirements for the College have been worked out and the following estimates prepared.

							Rs.	a.	p.
Main Building	..	..	..	..	..	..	1,17,000	0	0
Laboratories	..	..	..	..	..	..	50,000	0	0
Drawing Hall	..	..	..	..	..	..	30,000	0	0
Furniture	..	..	..	..	..	..	5,000	0	0
Shifting and re-erecting existing equipment	..	..	..	..	..	..	20,000	0	0
Physics and Chemistry apparatus	..	..	..	..	..	..	10,000	0	0
Total Rs.							2,32,000	0	0

Common Workshops and Lecture Theatre.—

						Rs.			
Machine Shop	..	..	..	..	..	120' X 40'	Rs. 63,600	0	0
Carpentry Shop	..	..	..	..	..	120' X 40'			
Smithy and Foundry Shop	..	..	..	..	..	170' X 40'			
Fitting Shop	..	..	..	..	..	120' X 40'			
Lecture Theatre	..	..	..	..	..	100' X 40'			
							32,000	0	0
							95,600	0	0

12. A residential hostel with quarters for 100 students for the Superintendent will cost about Rs. 1,00,000.. This will be necessary for mofussil students of both institutions.

The following items also be provided for.—

							Rs.	a.	p.
Compound Wall	..	..	..	..	..	..	15,000	0	0
Water and Drainage connections	..	..	..	..	..	..	10,000	0	0
Electrical Wiring	..	..	..	..	..	..	10,000	0	0
Servants quarters for College	..	..	..	..	..	..	10,000	0	0
Servants quarters for Technical Institute	..	..	..	..	..	..	10,000	0	0
Staff Quarters for Mistries	..	..	..	..	..	..	15,000	0	0
Workshop Superintendent's Quarters	..	..	..	..	..	..	10,000	0	0
Principal's Bungalow	..	..	..	..	..	..	20,000	0	0
Total Rs.							1,00,000	0	0

13. The abstract of expenditure on Buildings will therefore be as under :—

					Rs.
Technical Institute	..	..	..	..	1,25,800
Engineering College	..	..	..	..	2,32,000
Common Workshops and Lecture Theatre	..	..	..	..	95,600
Quarters, Compound Wall, etc.	..	..	..	..	1,00,000
Hostel for 100 students	..	..	..	..	1,00,000
Total					6,53,400

Additional equipment .. 1,01,000

Grand Total of Non-recurring Expenditure .. 7,54,400

14. A suitable plot of land may be acquired in front of the Jail or just behind it, and with this amount spent as Capital expenditure once for all on buildings and additional equipment, and an annual recurring grant of Rs. 50,000 to Rs. 60,000 for both the Engineering College and Technical Institute, Karachi, will provide a fine technical centre of which Sind will justly be proud.

1. Serial Number of Scheme 3.
2. Name of Scheme Scheme for the expansion of the office staff.
3. Brief description of Scheme Due to expansion of the Industries Department considerable additional staff would be required in the Head Office.
4. Area selected for application, if applicable Karachi.
5. Time expected to be taken for execution To be recruited immediately.
6. Brief details of staff required and how staff is proposed to be appointed.
 - (1) Office Superintendent.
 - (2) Stenographer.
 - (3) Senior Clerk for Technical Education.
 - (4) Senior Clerk for Cottage Industries.
 - (5) Two peons.

The above staff is expected to be appointed by advertisement.
7. Rough estimates of cost at existing rates :
 - (i) Capital Nil.
 - (ii) Recurring Rs. 5,760. per annum.

The above staff would be able to cope with additional work and would to that extent help in the expansion of cottage industries and technical education.
9. Extent to which the scheme would cater for returned service personnel.
10. General description of plant, equipment or stores
11. Labour required in the case of the larger schemes.
 - (i) to be imported from abroad,
 - (ii) to be obtained in India.
12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.
13. Brief indication where applicable of further development contemplated on the lines of the scheme in succeeding five year periods.
14. Any other remarks or information

Nil.

1. Serial Number of Scheme. 4.
2. Name of the Scheme Scheme for the construction of a suitable building to house the Industries Department.
3. Brief description of Scheme. With a view to accommodating the whole staff of Industries Department in one building and to remove congestion which is experienced in the present building, it is necessary to construct a grand building in a prominent locality on the Artillery Maidan.
4. Area selected for application, if applicable .. Karachi.
5. Time expected to be taken for execution. .. Will be communicated in due course.
6. Brief details of staff required and how staff is proposed to be obtained.
7. Rough estimates of cost at existing rates—
 (i) Capital Rs. 2,00,000.
 (ii) Recurring Nil.
8. Extent to which the scheme will be productive.
9. Extent to which the scheme will cater for returned service personnel.
10. General description of plant, equipment or stores:—
 (i) To be imported from abroad.
 (ii) To be obtained in India.
11. Labour force required in the case of the larger schemes. Nil.
12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.
13. Brief indication where applicable of further development contemplated on the lines of the scheme in succeeding five year periods.
14. Any other remarks or information. .. The details will be worked out by the Public Works Department which will be consulted in due course.

KEY STATEMENT OF SCHEMES FOR II—"INDUSTRIES AND INDUSTRIAL TRAINING"

Serial Number of Scheme.	Description of the Scheme.	Approximate cost of five years plan in thousands.		Category of Scheme (viz., Special Priority, All-Province etc.)	Special remarks, if any.
		Capital.	Recurring.		
1	2	3	4	5	6
1	Development of cottage and small-scale Industries..	Rs. 2,73	Rs. 8,18	All province.	
2	Expansion of technical training ...	8,49	5,10	Special priority.	
3	Expansion of Office Staff ...	Nil.	29	} Particular area.	
4	Construction of a new building for the Industries Department.	2,00	Nil.		
	Total ...	13,22	13,57		
		26,79			

III—ROADS.

1. Serial No. of Scheme ..
2. Name of Scheme ..
3. Brief description of Scheme ..

5. Road Development in Sind.

The scheme envisages the development of communications throughout the Province to meet the anticipated needs of the Province for twenty years after the war. The following mileages under different categories are proposed to be improved:—

		Total mileage as five year per whole plan. scheme.	
		Miles.	Miles .
<i>Category I—</i>			
National Highways	..	567	167
National Trails	..	291	210
Provincial Highways	..	968	630
District Roads (Major)	..	3,451	1,952
Bye passes	..	155	155
Desert Roads	..	350	..
<i>Category II—</i>			
District Roads (Minor)	..	3,592	1,180
Village Roads	..	1,637	487
Total		11,011	3,881

The National Highways and Trails, Provincial Highways, District Roads (major) and Bye-passes are proposed to be provided with pacca or semi-pacca surfacing depending upon the nature of soil and traffic requirements, except in undeveloped areas, where they will remain as earth roads. The roads in the desert area (excepting trails) will

remain as camel tracks. The District Roads (minor) and village roads will mostly be earth roads, but they will be provided with semi-pacca surfacing where the soil is bad. All the roads will be bridged with permissible likely interruptions reduced to the minimum.

4. Areas selected for application, if applicable.

The whole Province. With the scheme as now envisaged, no place within the Sind proper, excluding Kohistan, Desert and Rann area, will be more than about 2 miles from a road. All towns and villages with population of over 1,000 will be on the mesh.

5. Time expected to be taken for execution ..

Entire scheme (11,011 miles) 15 years.

A portion of the Scheme (3,881 miles) ..

.. 5 years, *i.e.*, in the first 5 year programme.

6. Brief details of the staff required and how staff is proposed to be obtained.

(a) Staff required for the entire period of construction :—

As shown in the accompanying statement printed at page 20 post.

(b) How the staff required is proposed to be obtained :—

Most of the technical staff, civil as well as mechanical, and the entire clerical staff will be obtained locally. The remaining technical staff not available in Sind may have to be recruited from outside. The question of training some officers in modern road construction in U. K. and U. S. A. and of opening a Technical Institute in Sind, where the civil engineering staff of the type of mistries, daroghas and foremen and all types of mechanical subordinate staff can be trained, is under consideration.

7. Rough estimate of cost at existing rates.

Entire scheme. First 5 year programme.

(11,011 miles). (3,881 miles).
Amounts in thousands.

Rs. Rs.

(i) Capital	....	....	....	{ Works	87,735
				{ Overhead charges ..	13,160

Total .. 2,78,228

1,00,895

Say .. 2,80,000

1,00,000

(ii) Recurring	....	....	....	..	6,276	3,100

Say .. 6,300

3,100

8. Extent to which the scheme will be productive. Not directly productive.

9. Extent to which the scheme will cater for returned service personnel. *Ex*-Servicemen can be employed as mechanics and skilled and unskilled workmen.

10. General description of plant, equipment or stores.

(i) to be imported from abroad.

(ii) to be obtained in India.

As shown in the accompanying statement printed at page 21 post.

11. Labour force required in the case of the larger scheme.

(i) Skilled Labour—

	For the entire scheme.	For the first 5 year programme.
For Machines ..	100	100
Brick layers, i.e., masons.	6,000	2,000
Brick moulders ..	1,200	400
Concretors ..	50	20

(ii) Unskilled labour—

For Construction period ..	11,000	4,000
For Maintenance .. (Average)	7,000	2,500

15

50 per cent. of the skilled and unskilled labour may be available in the Province and the remaining 50 per cent. may have to be recruited from the demobilized men or imported from other Provinces. Half of the earthwork is proposed to be done by mechanical equipment.

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery, or technical personnel.

Assistance of the Central Government will be required for obtaining plant and also for training of road engineers in U. K. and U. S. A., in case the scheme of deputing some officers for receiving such training is approved by this Government.

13. Brief indication, where applicable, of further development contemplated on the lines of the scheme in succeeding five year periods.

The whole scheme will extend over 15 years.

14. Any other remarks or information .. Nil.

Statement giving the list showing the staff required for the execution of the Post-war Road Development Scheme and for subsequent maintenance of improved and new roads.

(ITEM 6 OF SCHEME NO. 5.)

Serial No	Type of personnel.	Existing No. already employed on the scheme.	Additional No. required for execution of the scheme.	Total No.	Staff required for maintenance.
1	2	3	4	5	6
I. ENGINEERING STAFF.					
A—OFFICERS.					
1	Chief Engineer ... ..	...	1	1	1
2	Superintending-Engineers (Civil)	1	2	3	2
3	Executive Engineers (Civil)	3	14	17	9
4	Executive Engineers (Mechanical) ... ..	...	1	1	1
5	Assistant Engineers (Civil)	10	23	33	27
6	Assistant Engineers (Mechanical) ... ..	...	5	5	2
B—SUBORDINATES.					
1	Overseers (Civil)	27	349	376	99
2	Overseers (Mechanical) ... ..	...	17	17	8
II—OFFICE STAFF.					
1	Assistant Secretary ... ..	...	1	1	1
2	Superintendents, Head Clerks, Clerks, Storekeeper, Stenographers, Typists, Accountants and Dafties.	50	458	508	189
3	Draftsmen, Assistant Draftsmen, Tracers and Ferro printers	15	249	264	68
4	Soil Physicists, Statistical Assistants, Counters, Computers, Pletters etc.	...	42	42	...
5	Inferior Establishment (peons etc.)	118	747	865	398
III.—OUTDOOR STAFF.					
A.—CIVIL.					
1	Read Mistries	54	556	610	192
2	Other Mistries and Darogas ... ..	...	708	708	132
B.—TECHNICIANS.					
1	Superintendents of Machinery ... ..	...	4	4	2
2	Managers ... ..	...	19	19	10
3	Group Chargemen ... ..	...	4	4	2
4	Boiler Inspectors ... ..	...	4	4	2
5	Chargemen ... ..	...	19	19	10
6	Mechanics ... ..	...	83	83	34
7	Electricians ... ..	...	4	4	2
8	Drivers ... ..	...	1005	1005	220
9	Assistant Drivers ... ..	...	365	365	180
10	Fitters ... ..	...	96	96	40
11	Welders ... ..	...	16	16	4
12	Black-smiths ... ..	...	16	16	6
13	Drillers ... ..	...	22	22	7
14	Strikers ... ..	...	16	16	6
15	Bellow Boys ... ..	...	16	16	6
16	Turners ... ..	...	16	16	6
17	Oilmen ... ..	...	4	4	2
18	Moulders ... ..	...	4	4	2
19	Carpenters ... ..	...	4	4	2

Statement giving the list showing Plant and Machinery required for the
Post-war Road Development Scheme

(Item 10 of Scheme No. 5).

Serial No.	Description.	Number required for complete scheme.	Number required for the first five year programme.
1	2	3	4
1	Bitumen Mixers	50	20
2	Bitumen Sprayers	25	12
3	Bitumen Finishing Machines	10	2
4	Compressors	6	2
5	Drills	6 sets.	2 sets.
6	Crushers (Portable)	40	10
7	Athey Mobiloaders (Shovels)	6	2
8	Athey Tractors with wagons for haulage (one unit consisting of 1 Tractor and 2 Wagons).	12	5
9	Rollers—(a) Diesel	28	11
	(b) Steam	56	22
10	Tractors with Angle Dosers	50	19
11	Tractors with Angle Scrapers	10	5
12	Elevating Graders	6	2
13	Motor Graders	30	12
14	Rippers	11	4
15	Sheepfoot Rollers	11	4
16	Water Wagons (Bullock carts)	40	15
17	Lorries	300	100
18	Tractors with Trailors (one unit consisting of one Tractor and 10 Trailors).	15	5
19	Concrete Mixers	30	9
20	Concrete Finishing Machines	5	2
21	Athey Mobiloaders (Light Elevators)	20	5
22	Pumps	10	5
23	Engines for workshop	4	2

Mostly to be imported from abroad.

KEY STATEMENT OF THE INDIVIDUAL SCHEMES RELATING TO III--ROADS.

Serial Number of scheme.	Description of the scheme.	Approximate cost of five year plan in thousands.		Category of scheme (viz., special priority, All-province etc).	Special remarks, if any.
		Capital.	Recurring		
1	2	3	4	5	6
5	Roads	Rs. 1,00,000	Rs. 3,100*	All Province Scheme.	*Actual requirements will be much less due to the fact that practically no maintenance will be required in the first two years. The approximate capital and recurring expenditure on this Scheme during the subsequent 10 years will be Rs. 18 crores and Rs. 63 lakhs, respectively.

NARRATIVE STATEMENT OF OBJECTIVES OF THE POST-WAR ROAD PLAN FOR SIND.

— 0 — (1) INTRODUCTORY.

Sind is essentially an agricultural province. As the agricultural produce is not consumed locally, except to a very limited extent, it is necessary to transport it from the fields to the local collecting and marketing centres, and thence to the consumers. This requires an adequate system of communications which may consist of roads, railways or waterways. With the exception of certain areas which are to be developed after the war and for which new railway lines are under consideration, the province is fairly well served by railways.

2. Railways serve the purpose of long distance haulage of commodities but they require a net work of roads to bring in goods from the fields and villages to the rail-heads, and also to distribute the necessities of life to the villages. Moreover, local distribution cannot be done by rail, economically and for this, roads are necessary.

3. There is little scope for waterways in Sind in spite of the fact that the province is traversed from end to end by the Indus, and that the whole cultivable area is, or shortly will be served by a comprehensive system of irrigation canals. The Indus has steadily declined in importance as a navigable river since the end of the last century. During the cold weather there is little water in the river, and there will be less when the two new barrages are constructed. In the hot weather, the strong current of the river in flood is a serious obstacle to navigation, and the fluctuating level which causes inundation of wide 'Kachas' on both sides, makes access to it very difficult, except at certain places. There is therefore at present only a small amount of country boat traffic, and there is little scope for improvement. In the case of the canals, there are regulators at frequent intervals which obstruct the passage of boats, and apart from this, craft travelling at a moderate speed would cause damage to the sides of even the largest canals by wave-wash. Waterways must therefore be ruled out as a means of communication of any importance.

4. The role of roads in agriculture is not confined to providing a means of removing the produce. With the contemplated post-war improvement of agriculture, it will be necessary to transport to the farmer and distribute to his fields, improved seeds and artificial manures. Post-war education and public health plans will also depend greatly on roads for their success. It will not be possible to provide good schools and fully equipped hospitals and dispensaries in every village, and in order to enable the village people to take advantage of those which are provided, it is most necessary to connect up their villages by roads which will permit of ready and speedy access to educational and public health facilities, and which will allow timely medical aid to reach them in case of epidemics.

(2) OBJECTIVES.

5. On paper, the present mileage of roads in Sind is about 12,000 miles, and were these roads in good condition, they would suffice for the needs of the province at present and in the near future. Unfortunately, they are not in

good condition, and some of them hardly exist at all on the site. There are about 700 miles of surfaced road, mostly metalled and surface painted with tar or bitumen, the remaining mileage being earth roads. Such surfacing as exists has mainly been done in the last few years, and much of it is by no means satisfactory, as considerations of economy have led to the adoption of inadequate specifications. The earth roads vary from winding tracks, flooded and impassable even for bullock carts for the greater portion of the year, to fairly satisfactory surfaces motorable after a fashion except during rains.

6. A conference of the Chief Engineers of all the provinces and some of the larger States was called by the Government of India to meet at Nagpur in December 1943 to discuss planning of post-war road development and to attempt a combined approach to the problem of evolving a road scheme on an all-India basis. The result of this conference was the "Nagpur Plan" which estimated that the country's requirements of good roads during the twenty years immediately after the war would be 4,00,000 miles. The Nagpur Plan provided for the improvement of existing roads and the construction of new roads to make up this mileage during the ten years immediately after the war, and estimated the cost of this work at Rs. 450 crores.

7. The Nagpur Plan divides roads into four classes, two of which are further sub-divided into two. They are:—

- (i) *National Highways* running through the length and breadth of the country, connecting ports, foreign highways and capitals of provinces and large states, and including roads of strategic importance. In undeveloped areas, *National Trails* would be constructed on similar lines to national highways but to lower specifications. They would be converted into the highway specifications when the areas are developed.
- (ii) *Provincial Highways*, serving as main traffic arteries within the province, linking up district headquarters and important towns within the province, and connecting up to the national highways and provincial highways of adjacent provinces and states.
- (iii) *District Roads*. (a) *Major*, traversing the districts and linking up areas of production, markets, railways and highways; (b) *Minor*, similar to Major, but of secondary importance.
- (iv) *Village Roads* connecting villages with each other and with the nearest district roads, highways and railways.

8. National and provincial highways and major district roads will mainly be provided with some type of pacca surfacing in a width of 10 to 12 feet and with earth berms, and the other classes of roads will remain as earth roads except where local soil or other conditions make a higher specification necessary.

9. The Nagpur Conference evolved two formulae based on the population and area for determining the mileage of roads of two groups required for each province. They are:—

$$\left. \begin{array}{l} \text{Mileage of national and provincial highways} \\ \text{and major district roads.} \end{array} \right\} = \frac{A}{5} + \frac{B}{20} + N + 5T + D - R$$

Mileage of minor district and village roads = $V/5 + Q/2 + R + 2S + D$.

Where A = Agricultural area of a province in square miles.

B = Non-agricultural area of a province in square miles.

N = Number of towns and villages with population of 2,001 to 5,000.

T = Number of towns and villages with population over 5,000.

D = An allowance for agricultural and industrial development during the next 20 years.

R = Railway mileage in the province

V = Number of villages with population 500 or less.

Q = Number of villages with population 501 to 1,000.

R = Number of villages with population 1,001 to 2,000.

S = Number of villages with population 2,001 to 5,000

10. Sind's post-war road plan is based on the Nagpur Plan and the same classes and standards of roads have been adopted. The object is to provide during a 10 year construction programme the roads which, it is estimated, will be required for the needs of the province during the 20 years immediately after the war, both by improvement of existing roads and by construction of new ones. In order to arrive at the mileage of roads required, the Nagpur Plan formulae have been slightly modified. In the case of the first formula, that for national and provincial highways and major district roads, the only change is to omit the deduction for railway mileage. This is because on account of the geographical configuration of the province, it is inevitable that highways shall run parallel and close to the main railway lines, and these lines do not therefore produce an equivalent saving in road mileage.

11. The change in the formula for minor district and village roads is greater, and the modified formula adopted is:—

$$\text{Mileage} = \frac{A}{5} + \frac{V}{9} + \frac{Q}{4} + \frac{R}{2} + S + D,$$

where the notation is the same as before. The necessity for the modification is that the original formula is based purely on population. For its culturable area, the population of Sind is very sparse in spite of the fact that most of the culturable area is at present being cultivated, and the rest will shortly be brought under cultivation by the proposed two new barrages. As the whole area is being cultivated in spite of the comparatively small population, it is necessary to provide roads for it. The original formula gives a mileage of minor district and village roads and it is utterly inadequate for the needs of the province.

12. The mileages of the two groups of roads for each district in the province have been calculated from these two modified formulae. The roads which are to be treated as national highways and trails have been tentatively fixed by the Government of India who, it is expected, will pay for their cons-

truction and subsequent maintenance. The remaining mileage has been split up into the classes, provincial highways, major and minor district road's and village road's as local circumstances in each district warrant.

13. The specific objective of the Post-War Road Plan is to provide, by improvement of existing roads and construction of new ones, 11,011 miles of good roads. Details of the mileage of each class are given below. Approximately half of the mileage will be provided with some type of pacca surface, and the remainder will be earth roads, stabilised, where necessitated by, soil conditions. All roads will be fully bridged or provided with adequate stream crossings which will reduce interruptions of traffic to a specified minimum.

National Highways	641 miles including 74 miles of Bye-Passes.
National Trails ..	291 miles.
Provincial Highways.	1,033 miles including 65 miles of Bye-Passes.
District Roads (Major)	3,817 miles including 16 miles of Bye-Passes. and 350 miles of Desert Roads.
District Roads (Minor)	3,592 miles
Village Roads ..	1,637 miles
<hr/>	
Total	11,011 miles including 155 miles of Bye-Passes and 350 miles of Desert Roads.
<hr/>	

14. All towns and villages with a population of over 1,000 inhabitants will come on the network of roads, and most of the smaller villages will be linked up to them by village roads. The type of hardcrust adopted for the surfaced roads is, in general, selected with regard to economy in initial construction and ultimate maintenance, local soil conditions, and the availability of water and other materials for construction.

15. Table I printed at pages 31--32 post shows national and provincial highways and major district roads, and Table II printed at pages 33--34 post shows minor district and village roads for each district, the mileage of roads calculated according to the original and modified Nagpur Plan formulae and the mileage proposed in the plan.

(3) PHASING OF THE PLAN.

16. The plan has been prepared on the basis of the Nagpur Plan, and aims at providing within the first ten years after the war, a complete system of roads to meet the needs of the province during the two post-war decades. The Nagpur Conference proposed that in the first place a complete project be prepared, and immediately after this, detailed estimates be prepared for the work to be done in the first phase of two years. The complete project has accordingly been prepared, and the detailed estimates of the first phase of two years are nearing completion.

17. Meantime, the Government of Sind undertook the preparation of a Five Year Post-War Development Plan and to fit in with this comprehensive plan, approximately half the complete road plan was taken as a five year road plan.

18. Subsequent developments have made further modifications necessary. It has become apparent to the Government of India, that the complete projects of all provinces will exceed considerably the approximate estimate of Rs. 450 crores adopted by the Nagpur Conference. As a result, it has been proposed at the meeting of the Transport Advisory Council held in January 1945, at New Delhi specially to consider the Post-War Road Plan, that instead of curtailing the provincial plans, the period of construction should be increased from ten to fifteen years. This period of fifteen years should, it is proposed, be split up into four phases of two, three, five and five years. The first two year phase will correspond to the two year phase of the Nagpur Plan, and the first three phases totalling ten years will correspond to the full construction period of that plan. During these three phases the work to be done will be restricted to the provinces' share of the estimated amount of Rs. 450 crores provided in the Nagpur Plan, and the remaining work in the provinces' individual plans will be carried out during the fourth phase of five years. The first two phases will give a Five Year Plan.

19. This proposed modification of the phasing is suitable for plans which do not exceed the proportionate share of the Nagpur figure of Rs. 450 crores by more than about 50 per cent. Sind's plan, however, is estimated to cost Rs. 27.82 crores against its share from Rs. 450 crores which is intimated by the Consulting Engineer to the Government of India (Roads) to be about Rs. 6.35 crores, an excess of about 340 per cent. The Consulting Engineer has been asked to show how this figure of Rs. 6.35 crores has been arrived at, as on a purely *pro rata* basis Sind's share should apparently be Rs. 8.60 crores. However, the existing state of roads in Sind is considerably below the average of most of the other provinces, and in order to bring these roads up to a certain minimum standard, the province will require to spend more than merely its *pro rata* share calculated as Rs. 8.60 crores. This important point will have to be decided before any final decision on phasing can be reached.

20. Even if the above arguments are accepted, and Sind's share of the Rs. 450 crores becomes as much as Rs. 10 crores, the full programme to be carried out in the four phases totalling 15 years should not be much more than say, Rs. 15 crores. This is little more than half the expenditure involved in the present project. It is most important to bear in mind, that the project forms a complete plan, and although for purposes of finance, it may be necessary to break it up into several phases, one or more of these phases cannot be taken as an independent plan. If the present plan is not to be accepted for completion in its entirety, either over a 10 year, 15 year, or a longer period, it will be necessary to revise it and prepare a curtailed plan.

21. Subject to the remarks in the previous paragraph, the detailed estimates now nearing completion and originally intended to form the first phase of two years may now be taken as the first two phases of two and three years. They will subsequently have to be split up into first and second phase estimates.

(4) EXECUTION OF THE PLAN.

22. The execution of the Road Plan will require a very great increase in all ranks of the Public Works Department, both for the construction programme and for the subsequent maintenance of the improved roads. It has been emphasised in the Nagpur Report in the strongest terms that no part of the execution of the Road Plan should be entrusted to local bodies. It is proposed to accept this recommendation, and it is contemplated that the whole construction programme and subsequent maintenance be carried out by the Public Works Department.

23. No part of the work will be carried out by the irrigation divisions and a completely separate organisation within the department will be set up for the project. This will include the present roads administration, *viz.* Communications Circle and its three permanent divisions, Upper Sind, Central Sind and Lower Sind Roads Divisions, with their sub-divisions. The administrative arrangements necessary will be :

One Chief Engineer, three Circles, each with five construction divisions and each division with four sub-divisions, one research division with three sub-divisions, and one mechanical division with four sub-divisions.

24. As most of the roads which will be improved are at present in charge of the district local boards, they will have to be taken over from the boards. This will leave most of the engineering staff of the boards surplus to their requirements as there will be comparatively little engineering work when the roads are taken away from them. It is therefore proposed that such members of the district local boards' engineering staff as are considered efficient and willing should be taken into the Public Works Department for the execution of the Road Plan and its maintenance. Such men will be few, and timely arrangements for expansion of the various cadres of the Public Works Department are most essential for the successful start of the plan.

25. The execution of the Road Plan will require a very great amount of labour of all kinds, skilled, semi-skilled and manual. As the basic work in the construction of all roads will be the provision of an earthen sub-base raised sufficiently above ground level to prevent flooding by irrigation water or rain, there will be a very extensive earthwork programme. Even normal local labour in Sind is not adequate to carry out the earthwork required for the maintenance of canals, bunds and roads. The two barrage project which will be started after the war will make great demands on labour for earthwork and general manual work, and the additional land which they will bring under cultivation will call for a vastly increased number of cultivators. It is obvious therefore that it will not be possible to obtain adequate labour for earthwork within the province. The return of demobilised soldiers will have no appreciable effect in Sind, as few men of the labouring type have gone into the army from Sind, and there is likely to be ample work in other provinces to employ such of their returned soldiers as are prepared to do manual labour.

26. It will therefore be necessary to do a large proportion of the earthwork by earth-moving machinery such as angle-dozers, graders, elevating graders and scrapers. In addition to machinery for earthwork other types will be required for the various types of surfacing for roads, *e.g.* rollers, bitu-

men boilers and sprayers, asphalt and concrete mixers, quarrying plant, lorries etc. For the operation and maintenance of the plant, technicians of all kinds will be needed. There has been a great scarcity of such men in Sind in the past, and while some trained men are likely to be available on demobilisation from the army the supply will be far short of the demand. It is most important therefore, that steps be taken at a very early date to provide technical training institutes to turn out such men. Capable technicians cannot be turned out in a course of weeks or months.

27. The staff required both for the construction period of the plan and for subsequent maintenance of the improved and new roads is shown in the list printed at page 20 ante showing particulars of the Scheme.

(5) FINANCIAL ASPECT OF THE PLAN.

28. The financial return from a road project cannot be directly estimated, as it can, in the case of an irrigation project, but this does not mean that there is no financial return. There are certain direct revenues from roads, but the main ones are indirect. To pull a ton of goods over a mile of good road requires less time and less effort than to pull it over a mile of bad road or across country. This saving in time and effort can be converted into terms of money. There is also less expenditure on maintenance and repairs to vehicles on the good road. Although these savings can be estimated approximately, it is not practicable to recover them from the persons who benefit.

29. There is direct revenue in the shape of taxation on mechanically propelled vehicles using the roads, duties or taxes on fuels used by these vehicles, and import customs duty on the vehicles and their accessories and spare parts. Although roads are a provincial subject, the proceeds of only motor vehicle taxation and sales tax on petrol are provincial revenues, while the very lucrative excise duty on petrol and customs duty on vehicles and their accessories and spare parts go to the central revenues. At present a part—a very small one—of the petrol tax returns to the provinces by way of the Road Fund, but it is understood that even this will, in future, be discontinued.

30. The improvement of the existing roads and construction of new ones will give a very great impetus to the increased use of motor vehicles throughout the country. This will result in an equally great increase in central revenues from customs duty and petrol tax. It is therefore but just that, although roads are a provincial subject, the Central Government should give a very substantial contribution both for construction and maintenance of roads which will produce revenue for the Centre.

31. It is necessary that the Government of India should give an indication of the contribution that would be forthcoming from the resources at their disposal, (*viz.*, Reserve for Post War Development, Customs and Excise Duty on petrol and Customs Duty on motor vehicles and their accessories and spare parts), so that plans may be prepared for raising loan and tapping the provincial resources for providing funds for the Road Plan.

(6) ABSTRACT FROM THE ROAD PROJECT APPENDED TO THE PLAN.

32. The following tables and abstracts from the Project showing the costs of construction and maintenance of different classes of roads, details of the roads to be improved in each district, and details of establishment plant and machinery required are printed at pages shown against each :—

	Pages.
(i) List of staff required for construction and maintenance.	20
(ii) List showing requirements of plant and machinery.	21
(iii) Table I showing mileage of national highways and trails, provincial highways and District roads (Major) for each District, calculated as per Nagpur Plan formulae and the mileage as proposed in the project.	31—32
(iv) Table II showing mileage of District roads (Minor) and village roads for each District calculated as per Nagpur Plan formula and the mileage as proposed in the project.	33—34
(v) Statements 'A' and 'B' showing cost of construction of various classes of roads by districts.	35—36
(vi) Abstract showing estimated cost of works.	37
(vii) General abstract of total cost of full project (15 years programme) and of the first 5 year programme.	38—39
(viii) Statement showing cost of maintenance of roads ..	40—41

Table I showing mileage of National Highways and Trails, Provincial Highways and District Roads (Major) for each District, calculated as per Nagpur Plan Formula and the mileage as proposed in the Project.

$$\text{Government of India's Formula} = \frac{A}{5} + \frac{B}{20} + N + 5T + D - R$$

$$\text{Modified Formula} = \frac{A}{5} + \frac{B}{20} + N + 5T + D$$

Serial No.	Name of District.	Gross area in sq miles.	P. W. D. Sq. Miles.		Revenue (Sq. Miles.)		Assumed for Project (Sq. Miles.)				Town.		Designed mileages.	
			Agricultural area.	Non-agricultural area.	Agricultural area.	Non-agricultural area.	Agricultural area.	Non-agricultural area.	Forest.	Total Non-agricultural area "B".	Between 200-5000 "N".	Over 5000 "T".	Agricultural area.	Non-agricultural area B/20.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Karachi	8502	1623	6436	2869	5195	2248	5815	243	6058	6	2	450	803
2	Hyderabad	4440	3048	580	3682	546	3682	546	118	664	10	7	736	33
3	Thar Parkar { Barrage Desert	3510	3131	300	3131	380	3131	380	18	398	10	2	620	20
4	Nawabshah	3876	2720	801	2723	798	2723	798	152	950	10	4	545	48
5	Dadu	6450	785	5485	2812	3456	864	5407	73	5480	9	2	173	274
6	Larkana	2487	1529	792	1941	380	1735	586	64	650	9	4	347	33
7	Sukkur	5550	2000	3030	2403	2618	2200	2830	426	3256	13	7	440	163
8	Upper Sind Frontier	2028	1377	515	1590	293	1599	293	36	329	3	1	320	16
	Sind	47076	16818	28027	24710	20249	18182	26768	1130	27918	70	29	5687	1397

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Table I showing mileage at National Highways and Trails, Provincial Highways and District Roads (Major) for each District, calculated as per Nagpur Plan Formula and the mileage as proposed in the Project.—*contd.*

Government of India's Formula = $\frac{A}{5} + \frac{B}{20} + N + 5T + D - R$

Modified Formula = $\frac{A}{5} + \frac{B}{20} + N + 5T + D$

Serial No.	Name of District.	Designed mileages.					Mileage as per Govt. of India formula.		Mileages as per Project (on the basis of modified formula).						REMARKS.	
		Towns.		Total.	Future Development 10 per cent.	Grand Total.	Railway Mileage.	Net Mileage.	National.		Provincial Highways.	Distt. Roads (Major.)	Total.	Bye-Passes.		Grand Total.
		N.	St.						Highways.	Trails.						
1	2	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	Karachi	6	10	769	75	846	98	748	113	...	101	520	734	15	749	Bye-Passes have been calculated on the following basis :— District Headquarter town 5 miles each. Other Municipal 3 miles each. Notified Area Committee 2 miles each. The mileage of Bye-Passes works out as under— National Highways 74 miles. Provincial Highways 65 miles. District major Roads 16 miles.
2	Hyderabad	10	35	814	31	895	155	740	164	28	124	650	966	20	992	
3	Thar { Barrage Par. kar. Desert .	10	10	606	67	733	220	513	52	6	201	506	765	18	783	
4	Nawabshah	Nil	Nil	507	51	558	Nil	558	...	209	...	350	559	...	559	
5	Dadu	10	20	623	62	685	309	376	94	...	97	496	687	19	706	
6	Larkana	9	10	466	47	513	154	359	9	...	157	282	448	18	466	
7	Sukkur	9	20	409	41	450	92	358	...	...	92	352	444	19	463
8	U. S. F.	13	35	451	65	716	139	577	118	48	63	436	665	27	692	
		3	5	344	34	378	120	258	17	...	133	209	359	13	372	
	Sind	70	115	5249	525	5774	1287	4487	567	291	958	3801	5627	155	5782	
	Adding for Bye-Passes.	...	...	...	...	...	...	...	74	...	65	16	155	...	...
	Total	...	...	...	...	...	...	...	641	291	1033	3817	5782	...	...

Table II showing mileage of District Roads (minor) and Village Roads for each District, calculated as per Nagpur Plan Formula and the mileage as proposed in the Project.

Formula of Govt. of India: $V + \frac{Q+R+2S+D}{5}$

Formula—

Modified:— $A + \frac{V+Q+R+S+D}{5}$

Serial No.	District.	Agricultural area in square miles.	Towns and Villages.				Designed Mileages.						
			Government of India's Formula.							Grand Total.			
			Below 500 'V',	Between 501-1000 'Q',	Between 1001-2000 'R',	Between 2000-5000 'S',	V/5	Q/2	R.		2S	Total.	Square Development 30 per cent.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Karachi	2248	332	26	7	6	66	13	7	12	98	20	118
2	Hyderabad	3682	922	90	15	10	184	45	15	20	264	53	317
3	Thar Parkar, { Barrage, { Desert	3131	1041	65	11	10	208	33	11	20	272	54	326
4	Nawabshah	2723	792	48	16	10	158	24	16	20	218	44	262
5	Dadu	864	557	63	18	9	112	32	18	18	180	36	216
6	Larkana	1735	911	87	33	9	182	43	33	18	276	55	331
7	Sukkur	2200	844	85	21	13	169	42	21	26	258	52	310
8	Upper Sind Frontier	1599	486	29	11	3	97	15	11	6	129	26	155
	Sind	18182	5885	493	132	70	1176	247	132	140	1695	340	2035
												400	2100
													(say). (Assumed in the proceedings of the Nagpur Conference).

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Table I showing mileage at National Highways and Trails, Provincial Highways and the mileage calculated as per Nagpur Plan Formula and the mileage

strict Roads (Major) for each District, calculated as per Nagpur Plan Formula and the mileage as proposed in the Project.—contd.

Table II showing mileage of District Roads (minor) and Village Roads for each District, calculated as per Nagpur Plan Formula and the mileage as proposed in the Project.—contd.

Formula:—Govt. of India: $V + \frac{Q+R+2S+D}{5}$
Formula:— $\frac{A+V+Q+R+S+D}{5}$
Modified:— $\frac{A+V+Q+R+S+D}{5}$

Serial No.	District.	Designed Mileages.							Mileage as per Project.				Remarks.
		Modified Formula.							Distt. Roads (Minor).	Village Roads.	Total.		
		A/5	V/9	Q/4	R/2	S.	Total.	Future Development 10 per cent. D.				Grand Total.	
1	2	15	10	17	18	19	20	21	23	24	25	20	
1	Karachi ...	450	37	7	4	6	504	50	387	115	502		
2	Hyderabad ...	736	103	23	8	10	879	88	762	267	1029		
3	Thar { Barrage... Parkar { Desert ...	626	116	16	6	10	774	77	625	194	819		
4	Nawabshah ...	545	88	12	8	10	663	63	568	251	819		
5	Dadu ...	173	62	16	9	9	269	27	331	145	470		
6	Larkana ...	347	101	22	17	9	496	50	335	221	556		
7	Sukkur ...	440	94	21	11	13	580	58	373	236	609		
8	Upper Sind Frontier.	320	54	7	6	3	390	39	211	208	419		
	Sind ...	3637	654	124	69	70	4555	455	3592	1037	5229		i.e., 210 miles (or 4.2 per cent.) more than the mileage as per modified formula.

Statement "A" showing costs of construction of National, Provincial and District (Major) Roads.

(Amounts to the nearest thousand).

Serial No.	District.	Classification.	Mileage.	Land acquisition.		Earth work.	Surfacing.	Major bridges.	Other features.	Arboriculture.	Total.	Remarks.
				Permanent.	Temporary.							
1	2	3	4	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1	Karachi	National high-way.	113.0	63	29	150	1087	100	...	.	1420	
		Provincial high-way.	101.0	102	41	452	3044	15	...	65	3719	
		District major roads.	519.8	287	131	2791	11830	87	...	126	15253	
		Total ...	733.8	452	201	3308	15961	202	...	191	20401	
2	Hyderabad	National high-way.	163.7	411	101	634	3673	275	...	167	5682	
		National trails.	28.0			102	369					
		Provincial high-way.	124.5	238	68	558	4324	77	...	80	5343	
		District major roads.	650.2	676	236	2570	15665	161	...	208	19706	
		Total ...	966.4	1325	405	3914	24231	503	...	455	30733	
3	Thar Parkar	National high-way.	52.37	191	27	166	1858	38	...	50	2270	
		National trails	215.0	193		995	928	1153	681	...	3950	
		Provincial high-way.	201.24	327	76	635	7063	85	7	111	8305	
		District major roads.	505.71	468	143	1890	16043	193	39	157	18938	
		Desert roads ...	350.0	...	...	1178	...	...	...	...	1178	
		Total ..	1324.32	1365		4864	25892	1470	727	318	34636	
4	Nawabshah	National high-way.	93.5	102	34	102	1767	46	...	90	2141	
		Provincial high-way.	96.95	168	42	434	3065	66	20	62	3867	
		District major roads.	405.04	378	163	1657	13287	393	...	186	15964	
		Total ...	686.39	649	239	2093	18119	505	20	338	21962	
5	Dadu	National high-way.	8.5	...	...	8	15	20	...	...	43	
		Provincial high-way.	157.25	309	88	1074	4666	340	...	128	6614	
		District major roads.	282.20	407	131	1235	8949	258	...	73	11143	
		Total ...	447.95	806	219	2317	13630	627	...	201	17800	
6	Larkana	Provincial high-way.	91.75	230	67	591	3596	75	...	59	4618	
		District major roads.	361.50	364	211	1726	11387	128	...	109	13925	
		Total ..	443.25	594	278	2317	14983	203	...	168	18543	
7	Sukkur	National high-way.	118.2	177	43	416	2450	235	...	114	3441	
		National trails.	48.0	56	13	163	1129	8	...	17	1386	
		Provincial high-way.	63.0	153	42	401	2648	6	...	40	3200	
		District major roads.	436.0	432	167	2369	13826	314	...	140	17238	
		Total ..	665.2	818	255	3349	20059	569	...	311	25355	
8	Upper Frontier, Sind	National high-way.	17.0	24	7	103	130	8	...	16	288	
		Provincial high-way.	133.1	277	72	704	5238	111	...	88	6580	
		District major roads.	209.3	158	70	1285	7122	190	...	68	8893	
		Total ...	359.4	459	149	2182	12490	309	...	172	15761	

Statement "B" showing cost of construction of district (minor) and village roads.

(Amounts to the nearest thousand).

Serial No.	District.	Classification.	Mileage	Land acquisition.		Earth work.	Sur-facing.	Major Bridges	Other features	Arbori-culture	Total.	Remarks.
				Per-manent.	Tempo-rary.							
1	2	3	4	5	6	7	8	9	10	11	12	13
				Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1	Karachi	Minor	587.25	219	72	1592	...	21	...	96	2000	
		Village	115.25	40	23	300	...	...	...	...	372	
		Total	502.5	268	95	1892	...	21	...	96	2372	
2	Hyderabad	Minor	761.75	735	187	2863	45	114	...	244	4188	
		Village	267.40	108	68	678	...	...	...	...	853	
		Total	1029.15	843	255	3541	45	114	...	244	5041	
3	Thar Parkar	Minor	625.0	434	135	1918	430	166	...	196	3279	
		Village	194.0	132	44	440	...	...	...	...	616	
		Total	819.0	566	179	2358	430	166	...	196	3895	
4	Nawabshah	Minor	567.8	381	106	2078	208	96	...	170	3039	
		Village	251.0	164	48	503	...	...	...	...	780	
		Total	818.8	545	154	2581	208	96	...	170	3819	
5	Dadu	Minor	330.9	200	91	1208	30	2555	...	56	4200	
		Village	144.7	96	39	376	...	...	...	...	511	
		Total	475.6	296	130	1584	30	2555	...	56	4711	
6	Larkana	Minor	335.1	273	117	1478	120	26	...	107	2130	
		Village	220.75	199	74	574	...	...	...	...	847	
		Total	555.85	472	191	2052	120	26	...	107	2977	
7	Sukkur	Minor	373.0	319	92	1394	203	139	...	119	2266	
		Village	436.25	168	68	614	...	24	...	...	874	
		Total	809.25	487	160	2008	203	163	...	119	3140	
8	Upper Sind Frontier.	Minor	211.6	144	52	977	478	8	...	68	1727	
		Village	207.5	148	60	540	...	30	...	...	778	
		Total	419.1	292	112	1517	478	38	...	68	2505	

Table I showing mileage at National Highways and Trails, Provincial Highways Roads (Major) for each District, calculated as per Nagpur Plan Formula and the mileage as per the Project.—contd.

Abstract showing estimated cost of works, (excluding establishment, tools and plant and other overhead charges).

(Amounts to the nearest thousands)

Serial No.	Classification.	Mileage.	Land acquisition.	Earth work.	Surfacing.	Major bridges.	Special features	Arboriculture.	Total.	Remarks.
			Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
			GROUP I.							
1	National Highways	566'27	1149	1529	10986	792	...	437	14823	
2	National Trails ...	291'00	262	1260	2428	1161	681	17	5897	
3	Provincial Highways.	368'79	2300	4939	33644	785	27	633	42329	
4	District Major ...	3450'65	4592	15423	98309	1714	39	1067	121054	
5	Desert Roads ...	350'00	..	1178	...	...	...	...	1178	
6	By-passes ...	155'00	271	811	5312	...	...	135	6530	
	Total ...	5781'71	8484	25140	150677	4382	747	2200	191720	
			GROUP II.							
7	District Minor ...	3502'40	3557	13568	1523	3125	...	1056	22829	
8	Village Roads ...	1636'85	1488	4090	...	54	...	...	5632	
	Total ...	5229'25	5045	17658	1523	3170	...	1056	26461	
	Grand total ...	11010'96	13529	42798	152200	7561	747	3346	220151	

NOTE.—Rates adopted are 50 per cent. above

General abstract of total cost of the whole project (15 years programme) and of the first 5 years programme.

(Figure to the nearest thousands).

Serial No.	Description.	Whole project 15 years programme. (Estimated cost).			First 9 years programme. (Estimated cost).			Remarks.
		Group I National highways, provincial highways and major district roads.	Group II other district roads and village roads.	Total.	Group I National highways, provincial highways and major district roads.	Group II other district roads and village roads.	Total	
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1	ROAD WORK.							
	a. Earth ...	2,43,29	1,76,58	4,19,87	97,76	57,74	1,55,50	As per separate details attached (Statement A and B).
	b. Surfacing ...	14,53,65	15,23	14,68,88	6,14,50	7,97	6,22,47	
	c. Bye-passes ...	61,23	...	61,23	...	...	...
	d. Other fractures ...	7,47	...	7,47	7,26	18	7,44	
	e. Arboriculture ...	22,90	10,56	33,46	9,60	3,93	13,53	
2	Major bridges ...	43,82	31,79	75,61	13,00	2,20	15,20	
3	Land acquisition ...	84,84	50,45	1,35,29	34,31	15,93	50,24	
	Total ...	19,17,20	3,84,61	22,01,81	7,76,43	87,95	8,64,38	
4	TOOLS AND PLANTS.							
	a. At 10 per cent. of items 1 to 3.	28,76	4,26	33,02	11,65	1,32	12,97	
	b. Workshop equipment spare parts, etc.	14,16	1,84	16,00	4,49	51	5,00	
	c. Scientific instruments 3/4 per cent. of items 1 to 3.	14,38	2,13	16,51	5,83	66	6,49	†Excludes the cost of machinery for items covered by the works estimates.
	d. Camp equipage 3/4 per cent. of items 1 to 3.	14,38	2,13	16,51	5,83	66	6,49	
5	Special tools and plants ...	13,85	1,80	15,65†	7,03	80	7,83†	
6	WORKS ESTABLISHMENT.							
	a. Civil 1½ per cent. of items 1 to 3.	28,76	4,26	33,02	11,65	1,32	12,97	50 per cent. machinery.
	b. Mechanical...	9,56	1,24	10,80†	1,94	22	2,16	†Excludes the amount of Rs. 1,52,40,000 for establishment required for machinery, as it is already covered by the works people.
7	OFFICE ACCOMMODATION. (Construction).							
	a. Rents ...	5,36	70	6,06	1,09	12	1,21	
	b. Furniture ...	1,18	15	1,31	23	3	26	
	c. Stationary ...	3,05	39	3,44	62	7	69	
	OFFICE ACCOMMODATION. (Maintenance).							
	a. Residence ...	4,24	55	4,79	...	...	...	*The establishment charges have been calculated on the basis of completion of the whole project in ten years and the first phase in 2 years. It is now proposed to extend the completion period to 15 years and the first phase to two phases totaling 5 years.
	b. Office ...	4,12	54	4,66	...	...	...
8	Additional engineering and office staff.*	3,40,30	44,20	3,84,50	69,05	7,85	76,90	
	Audit charges 1 per cent. of items 1 to 3.	19,17	2,85	22,02	7,76	88	8,64	
9	Additional Technicians ...	9,22	1,20	10,42	1,87	21	2,08	
10	Surveys and preparation of detailed estimates.	1,56	20	1,76	79	9	88	
	Total ...	24,29,23	3,53,05	27,82,28	9,06,26	1,02,69	10,08,95	

ABSTRACT.

(Estimated costs in thousands).

Description.					Whole project.	First 5 year programme.
					Rs.	Rs.
Works	...	...	...	...	22,01,81	8,64,38
Work charged establishment			...	...	33,02	12,97
Total works	...	...	...	...	22,34,83	8 77,35
Over head charges		...	...	...	5,47,45	1,31,60
Total					27,82,28	10,08,95

Statement showing probable cost of maintenance of roads (on completion of the programme)

Serial No.	Type of Surface.	Classification of roads.	Mileage in each district.								Total.	Maintenance cost per mile.	Cost of maintenance (in thousands).	Remarks.
			Karachi	Hyderabad.	Nawabshah.	Thar Parkar.	Sukkur.	Upper Sind Frontier.	Larkana.	Dadu.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Concrete Slab	National Highway	16.8	58.0	13.25	20.20	2.7	...	...	...	119.95	Rs. 450	54	
		Provincial Highway	...	20.3	26.30	57.00	22.0	17.0	37.1	53.0	232.70	450	105	
		Major Roads	38.1	139.2	201.27	105.40	96.3	41.4	94.35	106.2	822.12	300	247	
		By-Passes	15.0	26.0	19.00	18.00	27.0	13.0	10.0	18.0	155.00	1000	165	
		Total	69.9	243.5	259.82	200.60	147.9	71.4	150.45	177.2	1329.77		561	
2	C. C. Trackways	National Highway	...	16.0	...	...	...	...	...	...	16.00	500	8	
		Provincial Highway	...	...	...	...	...	...	...	...	...	500	...	
		Major Roads	81.3	86.9	39.99	27.50	38.7	7.00	82.45	3.0	369.74	500	185	
		Minor Roads	...	5.1	...	5.62	7.4	7.75	12.50	3.0	41.37	400	17	
		Total	84.2	108.0	39.99	33.12	46.1	14.75	94.95	6.0	427.11		210	
3	Black top (Metalling and Surface Dressing)	National Highway	44.2	19.0	...	...	2.1	4.5	...	8.5	78.3	1500	117	
		Provincial Highway	18.4	...	...	...	...	...	...	27.0	45.4	1500	68	
		Major Roads	37.8	5.3	...	...	5.6	...	...	15.5	64.2	1000	64	
		Total	100.4	24.3	...	...	7.7	4.5	...	31.0	197.9		249	
4	Carpetting	National Highway	54.0	86.7	80.25	23.3	113.7	12.5	...	...	368.45	1500	553	
		Provincial Highway	82.1	104.2	70.70	144.3	41.0	116.1	54.65	77.1	690.15	1500	1035	
		Major Roads	219.7	332.2	254.74	373.3	295.5	160.9	174.65	158.0	2048.99	1000	2049	
		Total	433.8	523.1	405.69	540.9	450.2	289.5	229.30	235.1	3107.53		3637	

5	Brick trackways with carpeting or dressing	...	...	1971	11'0	175	3'4	...	...	35'85	1000	..35
6	Metalled rolled into soil.	...	...	3'0	27'03	27'85	6'25	...	...	65'03	300	20
7	Stabilized Soil	...	...	...	...	...	...	...	...	...	500	6
	National Highway	...	...	...	...	...	...	...	...	...	300	44
	Major Roads	...	...	...	...	...	...	...	...	...	300	1029
	Minor Roads	...	...	...	...	...	...	...	...	...	300	247
	Village Roads	...	...	...	...	...	...	...	...	...	150	1346
	Total	...	...	...	...	...	...	...	...	...	...	...
8	Stabilized Soil	...	...	...	...	...	...	...	...	...	...	...
	3' carpet (Middle east specification).	...	...	...	...	...	...	...	...	...	...	...
	C.C. Trackways	...	...	...	...	...	...	...	...	...	...	...
	Total	...	...	...	...	...	...	...	...	...	...	...
9	Desert area	...	...	...	...	...	...	...	...	...	...	...
	Major Roads	...	...	...	...	...	...	...	...	...	...	...
	Grand total	...	...	...	...	...	...	...	...	...	...	...

ABSTRACT.

Ordinary Maintenance Rs. 62,76,000

Special repairs—

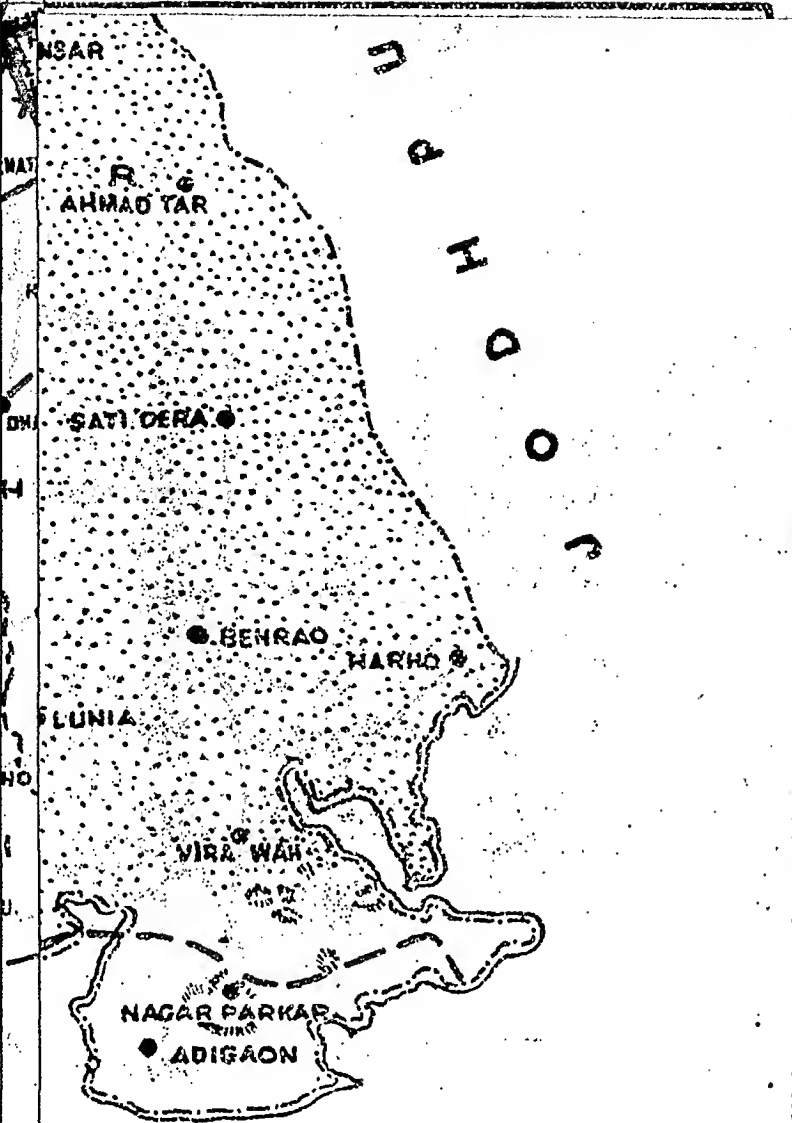
(Assuming that 2 per cent. of road mileage will need special repairs like renovating the surface etc.) 200 miles @ 18000 a mile Rs. 36,00,000

Total ... Rs. 98,76,000
Say ... Rs. 1,00,00,000

Say 63 lakhs.

IV.—ROAD TRANSPORT.

There is no scheme under this heading of development. Please see Chapter IV of Part I of this publication.



V. Svaran

WAR DEVELOPMENT OFFICER

V—ELECTRIC POWER DEVELOPMENT.

1. Serial No. of Scheme	..	..	6.
2. Name of Scheme	..	..	Hydro-electric generating station on the proposed new fall at mile 2- of the Rohri Canal.
3. Brief description of Scheme	..	..	The scheme contemplates the provision of 8400 K. W. hydro-electric plant with full capacity thermal standby and necessary sub-station and transmission system for supply of bulk power to Sukkur, Rohri, Shikarpur, Jacobabad, Garhi Yasin, Ratodero, Shahdadkot, Kambar, Larkana and Khairpur.
4. Areas selected for application, if applicable	..	..	Upper Sind <i>i.e.</i> , the districts of Sukkur, Upper Sind Frontier, Larkana and Khairpur State.
5. Time expected to be taken for execution	..	..	Will depend upon how soon the canal is remodelled to suit the installation of generating plant. The installation of the plant will take about two years thereafter—say 1949-50.
6. Brief details of staff required and how staff is proposed to be obtained.	..	..	A statement showing the personnel required on permanent basis for operation and maintenance purposes is enclosed (p. 45 post).
7. Rough estimate of cost at existing rates	..	..
(i) Capital	..	..	Rs. 120 lakhs at the existing rates for material and labour (as per details given at p. 45 post).
(ii) Recurring	..	..	Rs. 7.5 lakhs (as per details given at p. 46 post).
8. Extent to which the Scheme will be productive.	..	..	This can only be accurately estimated after the load and demand survey of the area has been carried out. With 50 per cent. load factor at the Power Station the return on capital is expected to be approximately 5 per cent.

9. Extent to which the Scheme will cater for re- turned service personnel. The work will be done on contract and only supervisory staff will be required as per the statement (printed at p. 46 post).

10. General description of plant, equipment or stores. } Statement printed at p. 47 post.
 (i) to be imported from abroad,
 (ii) to be obtained in India.

11. Labour force required in the case of the larger schemes. Skilled Labour .. 40.
 Unskilled Labour .. 100.

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel. Yes.

13. Brief indication when applicable of further Installation of about 4,000 K. W. Hydro-electric generating plant development contemplated on the lines of at the fall at Usif Dahri at mile 99 of Rohri Canal. the scheme in succeeding five year periods.

14. Any other remarks or information .. Please see the accompanying statement regarding the details at pp. 48-49 post.

*Statement of establishment required on permanent basis for operation
and maintenance purposes.*

(ITEM 6 OF SCHEME No. 6.)

A. *Administration—*

(1) Executive Engineer	One.
(2) Accountant	One.
(3) Head Clerk	One.
(4) Senior Clerk	One.
(5) Clerks	Five.
(6) Draftsman	One.
(7) Tracer	One.
(8) Peons	Four.

B. *Power Station—*

(1) Power Station Superintendent	One.
(2) Shift Operators	Four.
(3) Fitters	Two.
(4) Oilers and cleaners	Six.
(5) Coolies	Six.
(6) Store-keeper	One.
(7) Clerks	Two.
(8) Tracer	One.
(9) Peons	Two.

C. *Distribution System—*

(1) Distribution Engineer	One.
(2) Line Superintendent	One.
(3) Sub-Station Superintendent	One.
(4) Sub-Station Attendants	One.
(5) Linemen	Six.
(6) Coolies	Eight.
(7) Clerks	Two.
(8) Store-keeper	One.
(9) Peons	Two.

Capital cost, Depreciation and Maintenance charges.

(ITEM 7(i) OF SCHEME No. 6.)

Item.	Capital cost.	Depreciation.		Maintenance.	
		Rate.	Amount.	Rate.	Amount.
1	2	3	4	5	6
	Rs.		Rs.		Rs.
1. Hydro-Electric generating plant..	33,60,000	3.3%	1,11,000	1%	33,600
2. Diesel Standby	33,60,000	5%	1,68,000	1%	33,600
3. Civil Works	25,20,000	1%	25,000	1%	12,500
4. Sub-Stations	2,40,000	4%	9,600	2%	4,800
5. Transmission system	2,45,000	2%	48,900	1½%	36,675
Total ..	1,19,25,000	Say	3,62,500	Say	1,21,175
			3,63,000		1,21,000

	Rs.
1. Depreciation	3,63,000
2. Maintenance	1,21,000
3. Operation—	
(i) Cost of lubricating oil, waste and other engine room stores.. ..	20,000
(ii) Cost of diesel oil for operating the station during canal closure etc. at Rs. 100 per ton	1,08,000
(iii) Operation establishment including leave and pensionary charges ..	1,00,000
4. Overhead charges on items 2 and 3 at 10 per cent.	35,000
Total ..	7,47,000
Say ..	7,50,000

(ITEM No. 9 OF SCHEME No. 6.)

Executive Engineer	One.
Assistant Engineers—(One each for the Power Station and the transmission system)	Two.

Upper Subordinates Five.

Accountant	One.
Head Clerk	One.
Senior Clerks	Two.
Clerks	Nine.
Draftsman	One.
Tracers	Two.
Peons	Six.

General description of plant, equipment or stores.

(ITEM 10 OF SCHEME No. 6.)

1. Generating Station—

Hydro-electric generating sets comprising—

- (i) Vertical shaft Kaplan type water turbines direct coupled to alternators A.C. 3 phase 50 cycles 6600 volts. The turbines will be required to work to the following conditions :—

Maximum discharge 2,100 cusecs per turbine.

Minimum discharge 1,200 cusecs per turbine.

Head Maximum discharge initial stage 12 feet final stage 14 feet to 15 feet.

Minimum discharge initial stage 17 feet final stage 19 feet to 20 feet.

Number of units required 5 Nos.

- (ii) Discharge gates to pass a maximum of 2200 cusecs, ordinarily passing 400 cusecs only with a tolerance of 3 inches 5 Nos.

- (iii) Diesel electric generating sets 1600—1700 K. W. A. C. 6600 volts, 3 phase 50 cycles per second 5 Nos.

- (iv) Indoor type switchgear unit with oil circuit breakers, instrument and relay boards, for 10 generators with automatic voltage regulators 4 outgoing feeders and two station transformers 1 complete unit.

- (v) 25 K. V. A. Indoor type transformer 3 phase A. C. 6600/400 Volts 2 Nos.

- (vi) Overhead travelling crane and gentry 10 ton for a span of 35 feet and travel on rails about 225 feet 1 No.

2. Sub-Stations—

- (i) Step-up transformer, 1500 K. W. 6600/33,000 Volts 3 Nos.

- (ii) Step-down transformers 250 K. W. 5 Nos.

Step-down transformers 500 K. W. 2 Nos.

Step-down transformers 750 K. W. 3 Nos.

- (iii) Switchgear for eight step-down sub-stations.

3. Transmission Lines—

- (i) Materials e. g. poles, cross-arms, insulators etc. for 155 miles of 33,000 volts transmission line

- (ii) Materials e. g. poles, cross-arms, insulators etc. for 12 miles of 6,600 volts transmission line

Note.—These details are approximate as the project is not yet complete. All items under the head "Generating Station" will have to be imported from abroad. Some of the items under the heads "Sub-Stations" and "Transmission lines" viz. step-down transformers, specially those of small capacity, cross arms, insulators, bare copper wires, etc. are likely to be purchased in India.

KEY STATEMENT OF THE SCHEME UNDER V—"ELECTRIC POWER DEVELOPMENT."

Serial Number of scheme.	Description of the scheme.	Approximate cost of five-year plan in thousands.		Category of scheme (viz. special priority All-province, etc.)	Special, remarks, if any.
		Capital.	Recurring.		
1	2	3	4	5	6
6	Hydro-electric generating station on the proposed new fall at mile 2 of Rohri Canal.	Rs. 12,000	Rs. 750	Special Priority.	

*Plan for remodelling Rohri Canal and installation of
a hydro-electric station at the proposed new fall at mile 2.*

(ITEM 14 OF SCHEME No. 6.)

*I—Dismantling the present Tando Mastikhan Fall at mile 22nd of
Rohri Canal and Construction of a new fall at mile 2.*

1. Rohri Canal passes through the Khairpur State from roughly the middle of its third mile to about 50th mile. From third mile to Tando Mastikhan Fall in 22nd mile, its water level is generally well above the ground and the strata through which the canal bed passes are generally sandy. Before the advent of the Lloyd Barrage the sub-soil water level in this tract was fairly high, but on construction of the Rohri Canal and Khairpur Feeders East and West and their flowing perennially the same has risen further and certain areas of Khairpur State have got waterlogged.

2. To remedy this state of affairs it is proposed to lower the water level from 2nd mile to 22nd mile of Rohri Canal so that the full supply level of Rohri Canal in this reach becomes well below the ground and instead of Rohri Canal saturating the soil, it acts as a drain and drains the area already affected.

3. With this end in view, it is proposed to construct a new fall in 2nd mile of the Rohri Canal, dismantle the existing fall at Tando Mastikhan and lower the canal bed between the two. This will also necessitate reconstruction of all the road bridges in this reach with deeper foundations. The scheme, as a whole, is expected to cost roughly rupees 135 lakhs.

4. The waterlogging referred to above has thrown out of cultivation about 10,000 acres of land and adversely affected buildings in towns and villages. On completion of the proposed project the water level of the Rohri Canal will fall by about 8 feet. It is hoped that this fall in working full supply level of Rohri Canal will lower the sub-soil water level sufficiently to result in the entire area of 10,000 acres, referred to above, being reclaimed for cultivation, and the buildings saved from further damage.

*II—Hydro-Electric Station on the proposed new fall at mile 2 of the
Rohri Canal.*

5. The shifting of the fall and lowering of water level will increase efficiency of hydro-electric plant that is proposed to be installed at the 2nd mile fall. The fall would be 12 feet but the fall masonry would be designed to suit a fall of 14 feet as in all probability the fall would ultimately be 14 feet due to retrogression of level down-stream of the fall. It is, therefore, proposed that the hydro-electric generating plant should be designed for an effective head of 14 feet.

6. The water admitted into Rohri Canal varies between 10,000 to 6,450 cusecs, but most of the time it is over 9,000 cusecs. For the purpose of hydro-electric generation, the discharge may be taken as 9,000 cusecs. As the canal is closed for about three weeks every year, it is necessary to provide thermal

standby plant for supply during the 'closure' period. It is not necessary to provide hydro-electric standby plant against breakdown of the hydro-electric generating set when the canal is running, as the thermal standby plant could be brought into service during such emergencies.

7. The proposal contemplates the provision of 8,400 K.W. hydro-electric plant with full capacity thermal standby and necessary sub-station and transmission system for supply of bulk power to Sukkur, Rohri, Barrage Township, Sind Cement Factory, North Western Railway at Sukkur, Shikarpur, Jacobabad, Garhiyasin, Ratodero, Kambar, Shahdadkot, Larkana and Khairpur.

8. The cost of providing the necessary hydro and thermal generating plants, civil works and the transmission system, main sub-stations etc., is estimated to be Rs. 120 lakhs at current market rates for such works. Supply to towns in addition to those mentioned in paragraph 7 *supra* will involve further investment on sub-stations in those towns and distribution system if undertaken by Government.

VI.—MINING DEVELOPMENT.

There is no scheme under this heading of development. Please see Chapter VI of Part I of this publication.

VII—IRRIGATION, WATERWAYS AND DRAINAGE.

1. Serial No. of Scheme .. 7-A.
2. Name of Scheme .. Protective Irrigation Project—Part I—Lower Sind Barrage. (Hajipur Barrage).
3. Brief description of Scheme ..
 - (1) On account of contemplated Punjab withdrawals during the months of May to September, the only way to ensure adequate water supply to the Lower Sind is to construct Barrage and head works, 15 miles below Kotri.
 - (2) Four feeders namely 3 on left bank (of which one will be perennial canal) and one on right bank will take off above Lower Sind Barrage called Hajipur Barrage.
 - (3) Total culturable area commanded will be approximately 25,69,400 acres, including 43,000 of Forest land, of which Kabuli area will be 11,52,900 acres. Discharge required for Lower Sind feeders will be 51,330 and 1,815 cusecs in Kharif and Rabi respectively.
 - (4) Intensities proposed are 75 per cent. for rice, 60 per cent. for dry crop and 100 per cent. for Forest area.
4. Area selected for application, if applicable.—

Karachi District—

(a) Taluka Tatta excluding hill portion, (b) Mirpur Sakro excluding area covered by sea, (c) Taluka Ghorabari excluding sea portion, (d) Mahal Ketri Bunder excluding sea portion, (e) Taluka Shah Bunder excluding Kalar land in south, (f) Taluka Sujawal whole, (g) Taluka Mirpur Bathoro whole, (h) Taluka Jati excluding waste land on south.

Hyderabad District—

(a) Taluka Guni whole, (b) Taluka Badin excluding Kalar portion in south, (c) Taluka Tando Bago as far as Lloyd Barrage Zone, (d) Taluka Dero Mohabat upto Lloyd Barrage Zone.
5. Time expected to be taken for execution. The work is required to be started at the earliest possible moment and this can be done if the Government of India can arrange to obtain priorities for the import of plant and machinery. It will take four years for completion.

6. Brief details of the staff required and how staff is proposed to be obtained. As shown in the statement (printed at pp. 53-54 post). Most of the staff will be obtained locally.
7. Rough estimated cost at existing rates.
- | | | |
|-----------------|----|--|
| (i) Capital. | .. | Rs. 12,00,00,000 |
| (ii) Recurring. | .. | (2 per cent. of the capital cost) Rs. 24,00,000 per annum. |
8. Extent to which the scheme will be productive. About 1.5 per cent. (without contribution from the Punjab).
9. Extent to which the scheme will cater for returned service personnel. Skilled workmen may find employment during construction.
10. General description of Plant equipment or stores—
- | | |
|---------------------------------|---|
| (i) to be imported from abroad. | } As shown in the accompanying statement (printed at pp. 55-59 post.) |
| (ii) to be obtained in India .. | |
11. Labour force required in the case of the larger schemes.
- | | | | |
|------------------|----|----|--------|
| Skilled Labour | .. | .. | 2,000 |
| Unskilled Labour | .. | .. | 12,000 |
12. Whether assistance of the Central Government is likely to be required for obtaining materials, machinery and technical personnels. Full help will be required in obtaining machinery.
13. Brief indication, where applicable, of further development contemplated on the lines of the scheme in the succeeding 5 years. Gudu Barrage will extend for 3 years in the second 5 year plan.
14. Any other remarks or information. Nil.

Statement showing the staff required for the execution of the Rajipur Barrage Scheme and for its subsequent maintenance.

(Item 6 of Scheme No. 7-A.)

Serial No.	Type of personnel	Existing No. already employed on the Scheme.	Additional No. required for execution of the Scheme.	Total No.	Staff required for maintenance.
1	2	3	4	5	6
	I.—ENGINEERING STAFF.				
	A.—OFFICERS.				
1	Chief Engineer ..	1 (Part)	..	1 (Part)	1 (Part)
2	Superintending Engineers (Civil) ..	2	..	2	1
3	Executive Engineers (Civil) ..	5	4	9	5
4	Executive Engineers (Mechanical) ..	..	2	2	..
5	Assistant Engineers (Civil) ..	18	15	33	17
6	Assistant Engineers (Mechanical) ..	..	7	7	1
7	Group Mechanical Engineers ..	..	6	6	..
	B.—SUBORDINATES.				
1	Overseers (Civil) ..	72	66	138	48
2	Overseers (Mechanical) ..	..	22	22	2
	II.—OFFICE STAFF.				
1	Superintendents, Head Clerks, Clerks, Storekeepers, Steno-Graphers, Typists, Accountants and Daftris.	88	175	263	87
2	Draftsmen, Assistant Draftsmen, Tracers and Ferro Printers.	28	67	95	25
3	Inferior Establishment (Peons and Khalasis, etc.)	212	298	510	186
	III.—OUTER STAFF.				
	A.—CIVIL.				
1	Mistries and Darogas (Civil) ..	98	237	335	96
2	Mistries and Darogas (Mechanical) ..	..	54	54	4
	B.—TECHNICIANS.				
1	Mechanics for Head works ..	..	89	89	30
2	Electricians for Power House and other works.	..	32	32	10
3	Drivers ..	..	107	107	10
4	Fitters for Head Works ..	..	70	70	20
5	Foreman for Dragline Workshop ..	..	1	1	..

Serial No.	Type of personnel.	Existing No. already employed on the Scheme.	Additional No. re-quired for execution of the Scheme.	Total No.	Staff required for maintenance.
1	2	3	4	5	6
6	Chargemen for Excavators ..	..	16	16	..
7	Dragline Operators ..	..	184	184	..
8	Fitters on Dragline Machines ..	..	200	200	..
9	Blacksmiths on Dragline Machines.	..	40	40	..
10	Mechanics on Dragline Machines ..	..	80	80	..
11	Navigators ..	..	12	12	2
12	Drivers for Launches and paddling.	..	18	18	2
	(IV) MEDICAL STAFF.				
1	Medical Officer Class I ..	..	1	1	..
2	Assistant Surgeon ..	..	1	1	..
3	Sub-Assistant Surgeon ..	..	4	4	1
4	Compounders ..	..	35	35	2
5	Dressers ..	..	6	6	2
6	Nurses ..	..	4	4	1
7	Dais ..	..	2	2	1
	(V) RAILWAY STAFF.				
1	Traffic Officer ..	..	1	1	..
2	Assistant Traffic Officer ..	..	1	1	..
3	Station Masters ..	..	2	2	..
4	Assistant Station Masters ..	..	2	2	..
5	Guards ..	..	4	4	..
6	Porters ..	..	12	12	..
7	Firemen ..	..	6	6	..
	(VI) POLICE STAFF.				
1	Head Constable ..	..	1	1	..
2	Constables ..	..	4	4	..
	(VII) SCHOOL STAFF.				
1	Head Master ..	..	1	1	..
2	Assistant Teacher ..	..	1	1	1
3	Lady Teacher ..	..	1	1	1
4	Peons ..	..	2	2	2

*Statement giving the List of Plant and Machinery etc., required for
Head Works of Hajipur Barrage and Canal Construction.*

(ITEM 10 (i) OF SCHEME No. 7-A.)

Serial No.	Description of articles.	Quantity.
1	2	3
I—RAILWAY—BROAD GAUGE.		
<i>(a) Permanent Way.</i>		
1	Permanent Way materials for 5'-6" gauge track at 75 Lbs. per yard..	67 Miles
2	Sets of points and crossings	400 Sets
3	Buffer stops, Signals and other miscellaneous materials for 67 miles ..	Lot.
<i>(b) Rolling Stock.</i>		
4	Broad gauge 20 ton high sided trucks (New)	20 Nos.
5	Broad gauge high sided trucks all types (2nd hand)	500 "
6	Brake Vans	10 "
7	Officers' Carriage	2 "
8	Motor Inspection Trolleys	2 "
9	Push Trolleys (New)	2 "
10	Push Trolleys (2nd hand)	6 "
11	Material Trolleys 10 ton capacity	5 "
12	Tip Trolleys 15 ton capacity	2 "
13	Water Tank Waggon 3,000 Gallon capacity	4 "
14	Coaling Cranes	2 "
<i>(c) Locos.</i>		
15	Broad Gauge Locos 2nd hand, coal-burning—to carry train of 50 numbers, 16 to 20 ton trucks.	10 Nos.
16	Weigh Bridge, 40 ton capacity	2 Nos.
17	Turn Tables	2 "
18	Water Columns	2 "
19	Pumping Plant for water	2 "
20	High Level Water Tank, 25,000 gallon capacity	2 "
21	Other Miscellaneous items	Lot.
II—RAILWAYS NARROW GAUGE (2 FEET)		
<i>(a) Permanent Way.</i>		
1	Two feet gauge track, 20 lbs. including C. I. sleepers, fish plates, bolts, etc. complete	25 Miles
2	Points and Crossing sets	400 Sets.
<i>(b) Rolling Stock.</i>		
3	Tip Waggon 1 Cubic Yard	1,000 Nos.
4	Flat Waggon	10 "
5	Steam Winch	2 "

Serial No.	Serial No.	Description of articles.	Qu
1	1	2	
6	Charg		
7	Dragl	6 Timber Waggon .. .. .	..
8	Fitter	7 Brake Vans .. .. .	..
9	Black	8 Hand accident cranes .. .. .	..
10	Mech.	(b) Locos.	
11	Navi	9 Oil Fuel Locos N. G. for train of 40-1 Cubic Yard Waggon .. .. .	..
12	Driv ing.	10 Oil Fuel Locos N. G. for train of 20-1 Cubic Yard Waggon .. .. .	..
	(IV	(d) Miscellaneous.	
1	Medi	11 Turn Tables .. .. .	..
2	Assis	12 Fuel Pumps .. .. .	..
3	Sub-	13 Fuel Oil Tanks—6,000 Gallon capacity each .. .. .	..
4	Com	14 Miscellaneous items .. .. .	..
5	Dres	III—FLEET.	
6	Nur:	1 Dredger complete with pipe line, terminal pontoons and Jetting pontoons .. .. .	..
7	Dais	2 Pipe line and Terminal pontoons and other accessories for the other dredger .. .. .	..
	(V	3 Steel Barges 100 ton capacity .. .. .	..
1	Trat	4 Paddle tugs .. .. .	..
2	Assi	5 Motor Launches .. .. .	..
3	Stat	6 Heave-up boats .. .. .	..
4	Ass	7 Out-board motors .. .. .	..
5	Gua	8 Miscellaneous items, such as small row boats, etc. .. .. .	..
6	Por	IV—CRANES.	
7	Fir	1 Engine operated Scotch Derrick Cranes 10 ton capacity 60' radius .. .. .	..
	(	2 Engine operated Scotch Derrick Cranes 10 ton capacity 40' radius .. .. .	..
1	He	3 Hand operated Cranes 1½ ton 40' radius .. .. .	..
2	Co	4 Steam Loco Cranes B. G., 5 ton capacity 20' radius .. .. .	..
3	La	5 Floating Scotch Derrick Cranes, 10 ton capacity 70' radius, with independent engine and special jib .. .. .	..
4	Pe	6 Floating Scotch Derrick Cranes 25 ton capacity 60' radius, with independent engine and special jib .. .. .	..
		7 Cranes 10 ton capacity, 16' radius, engine operated .. .. .	..
		8 Cranes 10 ton capacity, 25' radius, engine operated .. .. .	..
		9 Electric Hoists 3 tons .. .. .	..
		10 Electric Hoists 1 ton .. .. .	..
		11 Crab Winches .. .. .	..
		12 Electric Crab Winches .. .. .	..

Serial No.	Description of articles.	Quantity.
1	2	3
V.—PUMPING PLANT.		
1	3" Pumping Sets complete with electric Motor and Switch gear	20 Sets.
2	Sets of pumping plant consisting of 3 sets 8" pump with 25 H. P. electric motor mounted on pontoons with adjustable spuds at 4 corners ..	8 Sets.
3	Sets of pumping plant consisting of 3 sets 8" pumps, engine driven, mounted on pontoons, with spuds at 4 corners	4 "
4	Sets of flumes for use for above	12 "
5	4" Centrifugal pumps electric driven	8 "
6	4" Centrifugal pumps, engine driven	2 "
7	2½" Centrifugal pumps, electric driven	8 "
8	2½" Centrifugal pumps, engine driven	2 "
9	2" Centrifugal pumps, electric driven	8 "
10	2" Centrifugal pumps, engine driven	2 "
Note.—All these pumps are required for lifts upto 40'.		
VI—PILING PLANT FOR STEEL SHEET PILING.		
1	Sets of land Piling Plants complete with 50' frame and No. 7 MC-KIERNAN-TERRY Steam Hammers	8 Sets.
2	Sets of Extracting Gears—	8 "
3	Sets of Floating Piling Plants with 50' frames and with No. 7 and 9 MC-KIERNAN-TERRY Steam Hammers	8 "
4	MC-KIERNAN-TERRY No. 3 Hammers (Spares)	2 Nos.
5	MC-KIERNAN-TERRY No. 7 Hammers (Spares)	2 "
6	Extra Winches	6 "
7	Under Carriage for converting floating into land, piling plant	4 "
8	Spare parts	Lot.
VII—CONCRETE MIXERS.		
1	Concrete mixers of 1 cubic yard capacity, electric driven	16 Nos.
2	Concrete mixers of ½ cubic yard diesel driven	5 "
3	Concrete mixers of ¼ cubic yard diesel driven	10 "
4	Hand mixers	15 "
VIII—AIR COMPRESSORS AND PNEUMATIC PLANT.		
1	Air Compressor—Large, direct coupled to electric motor, 300 cft. of Air P. M. at 100 Lbs.	2 Nos.
2	Portable Air Compressor small, oil engine driven, capacity 75 cft. of Air P. M. at 100 Lbs.	3 Nos.
3	Concrete Vibrators	Lot.
4	Drills Pneumatic	Lot.
5	Hammers Pneumatic	Lot.
6	Piping for Air Mains, etc.	Lot.
IX—DIVING GEARS.		
1	Complete sets of Diving Gears with dresses, air pumps, electric lamps, etc. ..	8 Nos.
X—WORKSHOP PLANT.		
1	Workshop Plant and Tools on Right Bank complete	Lot.
2	Workshop Plant and Tools on Left Bank complete	Lot.
3	Small Workshop Plant at each quarry	2 Sets.
4	Small Workshop Plant in work area	2 Sets.

Serial No.	Serial No.	Description of articles.	Quantity.
1	2	3	
		XI—WORKS WATER-SUPPLY AND TOWNSHIP.	
6	1	High Storage Tanks for works water-supply 30,000 gallon capacity on 30' staging	2 Nos.
7	2	High Storage Tanks for Township water-supply 30,000 gallon capacity on 30' staging	2 Nos.
8	3	Pipes and Fittings for works area	Lot.
9	4	Pipes and Fittings for Township on both sides	Lot.
10	5	Pumping Sets complete electric driven	4 Sets.
11	6	Tanks for water storage at quarry, 10,000 gallon capacity with 30' staging	2 Nos.
12	7	Pumping sets for quarry, oil engine driven	2 Sets
	8	Pipes and Fittings for quarry	Lot.
	9	Tube Wells	2 Nos.
		XII—MORTAR-MILLS.	
	1	Mortar Mills	2 Nos.
		XIII—ELECTRIC POWER PLANT.	
	1	Diesel Engine Generating sets of 500 K. Watts complete	2 Sets.
	2	Diesel Engine Generating sets of 125 K. W. complete	2 "
	3	Diesel Engine Generating sets of 250 K. W. complete	1 Set.
	4	Accessory plant in Power House	Lot.
	5	High Transmission lines and River Cable	Lot.
	6	Fuel Oil Tank	1 No
	7	Testing Plant	Lot.
		XIV—STEEL SHEET PILING.	
	1	Steel sheet piling rustless, permanent	6,000 Tons
	2	Steel sheet piling rustless, temporary	10,000 "
		XV—QUARRYING PLANT.	
	1	Air Compressors, large, driven by oil engine to give 300 cft. of Air P. M. at 100 Lbs	4 Nos.
	2	Rock Drills Pneumatic of various kinds	30 "
	3	Drill Sharpeners	2 "
	4	Oil Furnaces for heating drills	2 "
	5	Pipes and Fittings for Air Lines	2 Sets.
	6	Drill Bits	Lot.
		XVI—STONE CRUSHERS.	
	1	Granulators 30" x 6" capacity 10 tons per hour—diesel driven	2 Nos.
	2	Stone Crushers including screens medium for sizes upto 2 1/4 inches—capacity 20 tons per hour	4 "
	3	Stone breakers for sizes upto 6", capacity 20 tons per hour, diesel driven	2 "

Serial No.	Description of articles.	Quantity.
1	2	3
XVII—EXCAVATING MACHINERY.		
1	Excavators for the Barrage	2 Nos.
2	Tractors and Scrapers for the Barrage	4 "
3	Excavators for canal excavation	75 "
<p><i>Note.</i>—As an alternative tractors and scrapers may be used for earthwork, this point is not yet decided.</p>		
XVIII—COMPRESSORS FOR CANAL EXCAVATION.		
1	Portable compressors, 200 cft. of Air P. M. capacity at 100 Lbs.; with engines..	10 Nos.
2	Pneumatic Rock Drills	50 "
3	Drill Sharpeners	4 "
4	Field Workshops	4 "
5	Oil Furnaces	4 "
6	Pipes and Fittings for air lines	10 Sets.
7	Drill bits	Lot.
XIX—FIELD WORKSHOPS FOR CANAL EXCAVATION.		
1	Field workshops for canal excavators	20 Nos.
XX—MISCELLANEOUS.		
1	Oil Engines	5 Nos.
2	Miscellaneous small tanks	10 "
3	Cement grouting machines	8 "
4	Jack hammers for drilling hole for cement grouting	5 "
5	Portable platform weighing machines 1 ton	4 "
6	Geared pulley blocks 2 tons	12 "
7	Sheaved pulley blocks 1 ton	50 "
8	Motor Road Rollers 6 tons	2 "
9	Mooring buoys	12 "
10	Oil fuel Storage tanks	2 "
11	Motor Lorries	10 "
12	Miscellaneous plant and machinery including Jacks, etc.	Lot.
13	Hand Dredgers	15 Nos.
14	Electric flood lights	25 "
15	Gates and Gearing	6,350 Tons
16	Temporary Bridging	Lot.
17	Cement Guns	2 Nos.
18	Electric Welding Plant	2 "
19	Oxy-acetylene cutting plant	2 "
20	Bar bending machines	2 "
21	Block Yard Moulds	Lot.

1. Serial No. of Scheme	..	7-B.	Protective Irrigation Project—Part II.—Upper 'Sind' Barrage (Gudu Barrage).
2. Name of Scheme	(1) On account of contemplated Punjab withdrawals during the months of May to September inundation canals in Upper Sind suffer. The only way to ensure adequate water supply is to construct Barrage and head works about 90 miles above Sukkur or 8.5 miles above Machka gauge.
3. Brief description of Scheme	(2) There will be three feeders of which one will be on left bank mostly supplying water for dry crops and two on the right side giving rice supply to all the area except high patches where dry crop will be raised.
			(3) Total culturable area commanded will approximately be 23,23,600 including 1,46,700 of forest land of which Kabuli area will be 15,80,700. Discharge required for Upper Sind feeders will be 40,700 during Kharif season. There will be no rabi cultivation in this area.
			(4) Intensities proposed are 75 per cent. rice, 60 per cent. for dry crop and 100 per cent. for Forest.
4. Areas selected for application, if applicable.	1. Upper Sind Frontier District— (a) Taluka Kashmore, (b) Taluka Kandhkot, (c) Taluka Thul, (d) Taluka Garhi Khairo except a small portion settled on Lloyd Barrage.
			2. Sukkur District— (a) Taluka Sukkur (part), rest on Lloyd Barrage, (b) Taluka Shikarpur, rest on Lloyd Barrage (c) Taluka Garhiyasin (part), (d) Taluka Ubauro except sandy portions in east, (e) Taluka Mirpur Mathelo except sandy portion in east, (f) Taluka Ghotki (whole), (g) Taluka Pano Akil (whole), (h) Taluka Rohri (part), rest on Lloyd Barrage.
			3. Baluchistan District—(a) Nasirabad Tahsil (part). The work will be started just after completion of Lower Sind Barrage, i.e., in the 1st five year plan and will be completed within 4 years, i.e., in the second five year programme.
5. Time expected to be taken for execution.

6. Brief details of the staff required and how staff is proposed to be obtained.
7. Rough estimated cost at existing rates—
- | | | |
|----------------|-------|-------------------|
| (i) Capital | .. .. | Rs. 12,00,00,000. |
| (ii) Recurring | .. .. | Nil. |
8. Extent to which the scheme will be productive.
9. Extent to which the Scheme will cater for returned service personnel.
10. General description of plant equipment or stores—
- | | | |
|--------------------------------|----|--|
| (i) to be imported from abroad | .. | } Tools and Machinery spared from Hajipur Barrage will be utilized and extra required will be purchased from abroad. |
| (ii) to be obtained in India | .. | |
11. Labour force required in the case of the larger schemes.
- | | | |
|------------------|-------|--------|
| Skilled labour | .. .. | 2,000 |
| Unskilled labour | .. .. | 12,000 |
12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery and technical personnels.
13. Brief indication, where applicable, of further development contemplated on the lines of the scheme in succeeding 5 year periods.
14. Any other remarks or information.

Nil.

1. Serial No. of Scheme ..
2. Name of Scheme ..
3. Brief description of scheme ..

8 Remodelling Rohri Canal.

It is proposed to dismantle the present Tando Mastikhan fall in 22nd mile of Rohri Canal and construct a new fall in 2nd mile instead with a view to lowering F. S. L. and reducing water logging in Khairpur State.

4. Areas selected for application, if applicable.
5. Time expected to be taken for execution.
6. Brief details of staff required and how staff is proposed to be obtained.

7 years.

- (1) One Executive Engineer.
- (2) Four Assistant Engineers.
- (3) Sixteen Overseers.
- (4) A Group Mechanical Assistant Engineer for Dragline Excavators.

- (5) Two Chargemen for Dragline Excavators.
- (6) Sixteen Operators for Dragline Excavators.
- (7) Eight Fitters for Dragline excavators.
- (8) Twenty Drivers for pumps and concrete mixers and other lower grade establishment.

Proposed to be recruited locally.

7. Rough estimate of cost at existing rates.—
- (i) Capital ..
- (ii) Recurring ..

Rs. 1,35,00,000.

Nil, *i.e.*, no additional expenditure will be required over the present expenditure on maintenance of Rohri Canal.

8. Extent to which the Scheme will be productive.

This work is likely to eliminate annual compensation of about Rs. 2.0 lacs that is being paid to Khairpur State because of waterlogging. Beyond this it will not pay anything and the scheme is a purely protective scheme.

9. Extent to which the Scheme will cater for returned service personnel.

Nil.

10. General description of plant, equipment or stores—

(i) to be imported from abroad.

(a) 4-7/8 Dragline Excavators.

(b) 16 large pumps with electric motors.

(c) 4 concrete mixers.

(d) 3000 sheet piles 40 feet long.

Cement, steel bars and joists.

11. Labour force required in the case of the larger schemes.

500 to 1,000.

12. Whether the assistance of Central Government is likely to be required for obtaining materials, machinery, or technical personnel.

Yes, for obtaining materials and machinery.

13. Brief indication where applicable, of further development, contemplated on the lines of the scheme in succeeding five-year periods.

Nil.

14. Any other remarks or information.

Nil.

Key Statement of the Schemes under "VII—Irrigation, Waterways and Drainage"

Serial No. of the Scheme.	Description of the Scheme.	Approximate cost of five year plan in thousands.		Category of Scheme (viz., Special Priority, all province etc.)	Special remarks, if any.
		Capital.	Recurring.		
1	2	3	4	5	6
		Rs.	Rs.		
	1. Part I Hajipur Barrage.	12,00,00	1,20,00	Special Priority Scheme.	*This represents the expenditure to be incurred on the Gudu Barrage in the first 5-year programme. The remaining expenditure (Rs. 9 crores) will be incurred in the subsequent three years.
	2. Part II Gudu Barrage (Part).	3,00,00*			
	Remodelling - Rohri Canal.	1,00,00†	Nil.		† Expenditure amounting to Rs. one crore to be incurred in first 5 years and Rs. 35 lacs in subsequent 2 years.
	Total ..	16,00,00	1,20,00		
		17,20,00			

Narrative Statement of objectives of the Schemes under VII—"Irrigation, Waterways and Drainage".

IRRIGATION.

Hajipur and Gudu Barrages.

1. *The ideal of irrigation in any province.*—The ideal before the irrigation department of any province should be to make available, if physically possible, sufficient water to bring under cultivation all culturable land in the province, which cannot be cultivated satisfactorily with the rainfall alone usually obtained.

2. *The present state of irrigation in Sind.*—Viewed in light of this dictum the present state of irrigation in Sind is as follows :—

Sind falls in the arid zone of India, where the rainfall is less than 20 inches in a year. The western part of Rajputana, whole of Sind, Baluchistan and the southern part of Punjab form the north-west arid zone of India. Out of these Sind probably receives the least rainfall. The southern part of Sind receives about 10 inches per year on an average and the northern half receives not more than 5 inches in a year.

No cultivation worth the name is therefore possible in Sind on rain. Whatever cultivation is done is usually done with the aid of irrigation either natural or artificial.

Natural irrigation occurs by flooding of the lands on the bank of the river, during the annual rise of the river in summer. This irrigation is both precarious and limited. It is precarious because the rise in the river is never regular and steady and it is limited because the banks of a deltaic river like the Indus go on steadily rising.

The inundation canals were an improvement on this natural flooding as they took water to extensive tracts away from the river ; but still they depended entirely on the river levels which were never steady. Irrigation on inundation canals can never be satisfactory unless the land is much below the usual high flood level in the river.

Before the construction of the Sukkur Barrage, there were only inundation canals in Sind on many of which irrigation was far from satisfactory. The Sukkur Barrage canals introduced fully controlled irrigation in middle Sind, *i.e.*, roughly between Sukkur and Hyderabad on both banks. The parts of Sind to the north and south of this tract are still left on the inundation canals and suffer from all the disadvantages associated with that system of irrigation; these disadvantages are further aggravated in case of Sind, by increased withdrawals in the upper basin of the river Indus and its tributaries.

Most of the culturable land in Sind is river alluvium deposited by the river itself at one time or another and can be commanded by a reasonable rise in the river levels.

But there are certain tracts in Sind at the foot of the hills on the western border, in which there is good culturable land, which grows nothing at present as the rainfall is very precarious as already noted. There is also no hope of bringing this land under irrigation from the river Indus as the levels are very much above the river levels.

3. *The immediate objective.*—The immediate irrigation objective for Sind is therefore to give protection to the lands which have been left on the inundation canals, both to the north and south of the Lloyd Barrage area. A "Protective Irrigation Project" therefore is proposed for this area, which will introduce fully controlled irrigation in it.

After this project has been executed and put into operation, there will be very little culturable area left in Sind, which it is possible to bring under irrigation from the river Indus.

Most of this area left out will be on the southern boundary of Sind where the delta formation is still going on. Most of this land which will be left out of the scope of the present project is of recent formation, containing lot of sea salts and it will be a long time before this land becomes ripe for introduction of irrigation and cultivation. Also it is doubtful whether those lands can ever be brought in the scope of the present project and probably another Barrage for it somewhere near the mouth of the river Indus, may become necessary. But that is looking too far ahead, and has nothing to do with the present "Protective Irrigation Project."

4. *Two distinct parts of the present "Protective Irrigation Project."*—As the area to be protected by the present 'Protective Irrigation Project' is in two distinct parts, widely separated from each other by the Lloyd Barrage area, the scheme also is being prepared in two distinct parts which will be executed not simultaneously but one after the other.

The two parts in which the scheme is thus divided are :

- (i) The Hajipur Barrage Scheme.
- (ii) The Gudu Barrage Scheme.

Out of these, the Hajipur Barrage Scheme will be taken up for execution first and the Gudu Barrage Scheme will be started when the first scheme is nearing completion.

5. *The Hajipur Barrage Scheme.*—The Hajipur Barrage Scheme is for the protection of the area, which is to the south of the Lloyd Barrage area and part of which is at present settled on the various inundation canals in the southern part of Sind. This area comprises of the talukas Tatta, Mirpur Sakro, Gorabari and Mahal Ketu Bunder on the right bank, and the talukas Shahbunder, Jati, Sujawal and Mirpur Bathoro on the left bank of the river Indus in the Karachi collectorate. Out of the Hyderabad collectorate the whole of talukas Guni and Badin and parts of talukas Dero Mohbat and Tando Bago fall in this area. This area is served at present by inundation canals, the principal ones of which are the Fuleli and the Pinyari on the left bank and the Kalri and Baghar on the right bank.

A Barrage is proposed across the river Indus at Hajipur 18 miles below Kotri. A feeder on the right bank with a discharge of about 12,000 cusecs at the head will be constructed from above the Barrage to feed the existing canals like Kalri and Baghar. The Ochito river has dried out and the land on both sides now is awaiting introduction of irrigation. A new canal called Oderolal Branch is proposed for this area. This will form the tail of the right bank feeder. On the left bank there will be a separate feeder for Fuleli with a discharge at the head of about 18,000 cusecs. There will be a similar feeder for Pinyari with the same discharge at the head.

Most of the tract between the commands of Fuleli and Pinyari is sparsely cultivated or not cultivated at all at present. For this tract a perennial canal called Gunicanal with a discharge at the head of about 2,500 cusecs is proposed. The other canals will be only kharif canals. But all of them will get assured levels and supplies due to the construction of the Barrage.

The area served by this scheme will be about 25,69,000 acres out of which only about 11,52,000 is kabuli land at present. About 43,000 acres of reserved forests will be given irrigation supply under this scheme. The total discharge of all canals taking off from above the Hajipur Barrage will be 51,000 cusecs.

The annual intensity of cultivation will be 75 per cent. in rice area, 60 per cent. in dry kharif area, 80 per cent. in perennial area and 100 per cent. for forests.

The scheme is expected to cost eight crores of rupees at pre-war rates. Actually it may cost 12 to 16 crores.

As the scheme is of a protective nature, it is not expected to pay more than 1.5 per cent. on the capital invested.

The scheme will give employment for about four years to about 2,000 skilled workers, 12,000 unskilled workers and to about 1,500 of technical and clerical staff. Returned soldiers of skilled worker class can find employment on the project.

6. *The Gudu Barrage Scheme.*—This scheme is proposed for the protection of the area to the north of the Lloyd Barrage area and at present settled on inundation canals in northern Sind, the principal ones of which are the Desert, Begari and Sind wah on the right bank and Sehar, Dahar, Mahi, Maharo Lundi, Korai, etc., on the left bank. This comprises of talukas Kashmore, Kandhkot, Thul and Garhi Yasin of the Upper Sind Frontier district and the talukas Sukkur, Shikarpur, Pano Akil, Ghotki, Mirpur Mathelo and Ubauro of the Sukkur collectorate.

A Barrage is proposed across the River Indus at the northern boundary of Sind. There will be one feeder on the left with a discharge at head of about 8,000 cusecs, which will feed all the existing canals and new ones that are proposed. This area is at present growing mainly dry crops and under the proposed scheme also it is proposed as dry crop area. On the right there will be two feeders each with a discharge of 12,000 cusecs at head. One feeder will feed the Desert and Kandhkot Rajwah. The other feeder will feed the Begari, Sind wah and other canals in that area. These feeders on the right will supply water for rice cultivation except to area on Adiowah and Kandhkot Rajwah.

Most of this area is occupied at present. The total area served by this scheme will be 23,24,000 acres out of which 1,47,000 is forest land and 15,81,000 is Kabuli.

The annual intensity of cultivation will be 75 per cent. in rice area and 60 per cent. intensity in kharif and 15 per cent. bosi rabi in dry crop area.

The scheme is expected to cost about Rs. 8 crores at pre-war rates and may cost anything from 12 to 16 crores at post-war rates depending on the time when the work is commenced.

As the scheme is of a protective nature it is not expected to pay more than 2.25 per cent. in the tenth year from the commencement of its functioning.

The scheme will give employment for about 4 years to about 2,000 skilled workers and 12,000 unskilled workers and to about 1,500 of the technical and clerical staff. Returned soldiers of the skilled worker class can find employment on the project.

7. *The benefits of these schemes.*—The benefit of these schemes is quite evident and need not be stressed further. An area of about 48,90,000 acres will be provided with assured water supply, unaffected by the notorious vagaries of the River Indus. Their commencement and execution at an early date is bound to shell increased prosperity to Sind in general and to the northern and southern parts of it in particular.

8. *The programme of works.*—Out of the two main parts of the scheme of 'Protective Irrigation Project' the part comprising the Hajipur Barrage and the feeders taking off above it, is proposed to be taken up for execution first as the inundation canals in the southern part of Sind are suffering more than those in the northern part of Sind, on account of increased withdrawals in the upper basin of the Indus and its tributaries.

This part of the scheme will take about 4 years in execution. The second part, i.e., the Gudu Barrage and the feeders will require about 4 or 5 years more. As soon as the Hajipur Barrage is finished the Gudu Barrage can be started. That means the Gudu Barrage scheme can be started one year before the Hajipur Barrage scheme is finished. Thus the total period for the execution of both parts will be 7 to 8 years. The plant and machinery used for the Hajipur Barrage will be transferred to the Gudu Barrage after completion of the first.

9. *Necessity of starting Hajipur Barrage as early as possible.*—As the Lower Sind inundation canals are suffering acutely due to increased withdrawals in the upper parts of the Indus basin and as their condition will become still worse with further withdrawal which are proposed there, it is imperative to start Hajipur Barrage work as early as possible.

The project for this part of the scheme will be ready by July 1945. But the work cannot be started unless all the machinery which is required for its execution is obtained. Most of this machinery is to be imported. Indents for these and for the stores are being prepared and will be forwarded when ready to the Central Government who will have to be requested to grant the highest priorities for them as the work is so urgent.

10. Also please the statement of objectives accompanying Scheme No. 6 under V "Electric Power Development" (printed at pp. 48-49 ante).

A map of Tando Arif District, showing its boundaries and various towns. The district is bounded by the Arabian Sea to the south and the Tando Arif District boundary to the north. The map includes the following towns and locations:

- TANDO ARIF
- WIDH
- SRI
- KHATHAR
- TANDO AHMAD TAR
- TAND
- JADULAG
- SHAH
- SATIDERA
- BEHRAO
- HARHO
- VIRA WAH
- NAGAR PARKAR
- ADIGAON

R DEVELOPMENT OFFICER

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VIII—OTHER PUBLIC WORKS.

—: 0 :—

prescribed form have not yet been prepared. In fact it is not possible to do so until the individual schemes under the other heads of development have been finally approved. After this is done, it will be possible to know the building programme involved in the Post-War Development Plan as a whole, on the basis of which a Scheme could be prepared under this heading.

2. The tentative building programme as envisaged in the individual schemes included in this publication, is as follows :—

Serial No.	Heading of Development.	Approximate cost on account of buildings.
		Rs.
1	Industries and Industrial Training	8,53,000
2	Agriculture	82,36,000
3	Fisheries	3,05,000
4	Rural Uplift and Village amenities	6,42,000
5	Education	10,00,000
6	Medical and Public Health Services	1,25,00,000
7	Housing and Town Planning	1,31,25,000
8	Rough cost of the unspecified item included in the other under the other headings of development.	33,39,000
	Total	4,00,00,000

3. The abovementioned amount of four crores of rupees is already included in the cost of respective individual schemes mentioned in this publication ; but in addition to that amount, about one crore of rupees is likely to be spent in connection with certain other important major works pertaining to the various departments which were postponed as a result of the war but will be carried out in the post-war period.

4. Also please see Chapter VIII of Part I of this publication

A.—AGRICULTURE. IX. AGRICULTURE (INCLUDING VETERINARY, LIVESTOCK, LAND DEVELOPMENT, ETC.)

1. Serial No. of Scheme	..	9.	
2. Name of Scheme	..	..
3. Brief description of Scheme	..	..
			<i>Increased cultivation of pulse crop in rice areas.</i>
			Pulse crops are grown as dubari crops in rice areas in Sind. The average of such areas for the last 3 years is given below by districts—
			Sukkur 1,13,551
			Upper Sind Frontier : : 1,07,357
			Larkana 1,35,975
			Dadu 59,405

It is necessary to increase this area both with a view to get a bigger production of pulse crops and with a view to increasing the fertility of the soil. Besides propaganda by the Department action on the following subjects must be taken to achieve this object;—

(i) Stocking pulse seeds at all our depots. 50,000 maunds gram, 40,000 maunds matar, and 10,000 maunds mung will be stored.

(ii) Exemption of assessment for the whole area under pulse as dubari crop, for the 5 years of the plan. At the end of this period it is expected that the zamindars and haris would get into the habit of sowing dubari pulses and thereafter we can consider charging assessment for the crop.

All Districts except Nawabshah where there is no rice cultivation.

Immediate.

No extra staff is required.

4. Areas selected for application
5. Time expected to be taken for execution
6. Brief details of staff required

7.	Rough estimate of cost .. ..	.. ..	(i) Capital .. ..	.. ..	Nil.
		.. ..	(ii) Recurring :—	.. ..	Rs.
			Cost of seed and bags .. ..	.. ..	7,60,000
			Overhead charges, e. g. storage and cartage ..	.. ..	25,000
			Loss from exemption of assessment ..	.. ..	4,00,000
				Total ..	11,85,000 per annum.
8.	Extent to which the scheme will be productive.	Not directly to Government, but about 4,00,000 maunds of pulses will be produced in addition to the average annual production. The increase in soil fertility will also lead to additional rice production estimated at about 2,00,00,000 maunds every year. The cost of seed will be recovered by sale for cash.			
9.	Extent to which scheme will cater for returned service personnel.	Nil.			
10.	General description of plant, equipment, etc.	Nil.			
11.	Labour force required	Nil.			
12.	Whether the assistance of the Central Government is required for obtaining material and personnel.	Nil.			
13.	Brief indication of further development in succeeding five-year periods.	Nil.			
14.	Any other remarks or information.	.. ..		

1.	Serial No. of Scheme	..	10.
2.	Name of Scheme	..	<i>Increased cultivation of cattle fodders.</i>
3.	Brief description of Scheme	..	The cultivation of fodders in Sind at present is not on a sufficient scale to meet the demands for cattle fodder and the fodders produced do not supply sufficient feed for the cattle in the Province. It is therefore necessary to increase the production of cattle fodders both in kharif and in rabi seasons. In kharif season the most important fodder crop is jowar, while gwar and maize are also to a small extent cultivated. In rabi, very little fodder crop is at present cultivated. The following steps should be taken to encourage more cultivation of fodder crops:—
			(i) Provision of adequate quantity of seeds in our depots.
			(ii) Reduction in assessment for all the fodder crops. There should be 50 per cent. reduction in the assessment for all rabi fodders. As regards the kharif, the problem is a little difficult. In areas which grow ordinarily large quantities of jowar, bajri and gwar, there is no necessity for offering an inducement in the shape of reduction in assessment. I would, therefore, suggest restricting the concession in assessment to the extent of 50 per cent. to those dehs where rice or cotton is cultivated in more than 70 per cent. of the average cultivated area of the last five years.
4.	Areas selected for application	..	The whole Province.
5.	Time expected to be taken for execution	..	Immediate.
6.	Brief details of staff required	..	No extra staff will be required.

7. Rough estimate of cost	(i) Capital.	..	..	..	Nil.
	(ii) Recurring—	..	..	..	Rs.
	Cost of seed & bags	..	..	..	2,00,000
	Overhead charges	..	..	..	10,000
	Estimated loss to Government in exemption of assessment	..	..	..	2,00,000
				Total ..	4,10,000 per annum.
8. Extent to which the scheme will be productive.	Not directly to Government, but the effect in improvement in quality and quantity of cattle will be beneficial to Agriculture and will result in increasing production of milk and crops. The cost of seed and bags will be recovered by sale on cash payment.				
9. Extent to which the Scheme will cater for returned service personnel.	Nil.				
10. General description of plant, equipment, etc.	Nil.				
11. Labour force required	Nil.				
12. Whether the assistance of the Central Government is required for obtaining material, etc.	No.				
13. Brief indication of further development in the succeeding five years.	Nil.				
14. Any other remarks	Nil.				

I.	Serial No. of Scheme	...	...	II.		
2.	Name of Scheme	...	...	...	<i>Increase in oil seeds area.</i>	
3.	Brief description of Scheme	...	...	...	At present rabi oil seeds are grown in Sind as follows:—	
				...	Karachi	21,743
				...	Dadu	29,533
				...	Larkana	54,792
				...	Upper Sind Frontier	38,688
				...	Hyderabad	35,414
				...	Thar Parkar	5,666
				...	Nawabshah	26,429
				...		24,258
						<hr/> 2,36,523

It is possible to increase the area under oil seeds and it is desirable to do so as this will increase the rabi intensity all over the Province. One of the chief reasons why Zamindars do not extend oil seeds cultivation is that oil seed yields at present are very low. It is therefore necessary to produce high yielding varieties of seeds in large quantities for distribution. This work requires special staff for multiplication. This scheme aims at producing following quantities of important varieties of seeds for distribution:—

	1st year	2nd year	3rd year	4th year	5th year	
80 maunds.
2,000 maunds.
5,000 maunds.
10,000 maunds.
10,000 maunds.

4. Areas selected for application. The whole Province; but the work will be concentrated mainly in the Barrage areas.
5. Time expected to be taken for execution To be started immediately.
6. Brief details of staff required 2 Graduate Assistants Rs. 110-8-150.
7. Rough estimate of cost.—
 (i) *Capital Nil*
 (ii) *Recurring*

	Pay of staff and allowances				
	1st year.	2nd year.	3rd year.	4th year.	5th year.
Cost of seed and bags	1,225	30,000	75,000	1,50,000	1,50,000
Overhead charges...	25	500	1,500	3,000	3,000
General contingencies	..	500	500	500	500
	1,250	31,000	77,000	1,53,500	1,53,500

8. Extent to which the scheme will be productive.— This will be directly productive to Government. The Government can collect assessment for the additional acres that will be brought under oil seeds in addition to the existing rabi areas. There is besides an additional income that will accrue to hari and zamindar.
9. Extent to which the scheme will cater for returned service personnel.— Nil.
10. General description of plant and equipment required. Nil.
11. Labour force required Nil.
12. Whether the assistance from the Central Government is required for obtaining material. No.
13. Brief indication of further development .. Nil.
14. Any other remarks Nil.

1. Serial No. of Scheme 12.

2. Name of Scheme *Kalar Reclamation.*

3. Brief description of scheme There are large areas in Sind which are so kalarish that cultivation is not possible even though water is available. Every year more and more lands are getting kalarish due partly to water-logging. It is necessary to prepare a plan for a large scale kalar reclamation on un-occupied as well as occupied lands. In this scheme it is proposed to appoint one Gazetted officer of the Agriculture Department and one Gazetted officer of the Public Works Department for a period of six months. They will jointly prepare a scheme taking into consideration the possibilities of reclamation both from the point of view of soil conditions and availability of water. After the scheme is prepared, it will be possible to decide what work and on what scale should be undertaken.

4. Areas selected for application The whole barrage area.

5. Time expected to be taken for execution .. Six months.

6. Brief details of staff required and how staff is proposed to be obtained—

(1) Class II Agriculture Officer	..	One.
(2) Class I Public Works Department Officer	..	One.
(3) Clerk	..	One.
(4) Typist	..	One.
(5) Peons	..	Five.

The staff will be taken on deputation from the respective departments.

7. Rough estimate of cost—

(i) Capital

(ii) Recurring

	Nil.	Rs.
Pay of Officers	..	8,000
Pay of establishment	..	1,000
Allowances	..	5,000
Contingencies	..	2,000
		<hr/>
		16,000 per annum.

8. Extent to which the Scheme will be productive.

After a plan is prepared, every acre of un-occupied land that is reclaimed will bring in an income to Government in the form of assessment and occupying price. Private lands that are reclaimed will also bring an income to Government in the shape of annual assessment.

9. Extent to which the Scheme will cater for returned service personnel.

Such personnel can be recruited for Clerk or Typist's post.

10. General description of plant and equipment required.

Nil.

11. Labour force required

Nil.

12. Whether the assistance of Central Government is required.

Nil.

13. Brief indication where applicable of further development.

Reclamation on a large scale can be undertaken if a suitable scheme is prepared.

14. Any other remarks

1.	Serial No. of Scheme	...	...	13.	
2.	Name of Scheme	...	...	(a)	<i>Survey of areas in Kohistan for anti-erosion works.</i>
				(b)	<i>Construction of tanks for storing rain water in Kohistan.</i>
				(c)	<i>Constructions of the wells in Kohistan.</i>
3.	Brief description of Scheme	...	...		The Kohistan tract of Karachi, Dadu and Larkana districts depends entirely on rainfall for cultivation of crops. The rainfall is scanty and uncertain. This rainfall can be utilised to a much greater extent than it is today by the three works mentioned at item 2. It is necessary to survey the area for drawing up plans of works under all the three heads. It is proposed to entrust such a survey to an Engineer with experience of this work. The survey will take six months.
					Kohistan in Karachi, Tatta and Larkana Districts.
4.	Areas selected for application	...	...		6 months.
5.	Time expected to be taken for execution	...	...
6.	Brief details of staff required and how staff is proposed to be obtained—				<p>One Engineer.</p> <p>One Typist.</p> <p>Three peons.</p> <p>The Engineer will be recruited by advertisement and the other staff by selection.</p>
					Nil.
7.	Rough estimate of cost	...	...
					<i>Capital</i> Nil.
					<i>Recurring—</i>
					Pay of Officers 6,000
					Pay of establishment 500
					Allowances 4,000
					Contingencies 1,000
					Total 11,500 per annum.

8. Extent to which the scheme will be productive. Once the plans of works are prepared and put into execution, there will be considerable increase in cultivation in this area and this will bring an additional annual income to Government in the form of assessment.
9. Extent to which the Scheme will cater for returned service personnel. The typist can be recruited from such personnel.
10. General description of Plant, Equipment, etc. required. Nil.
11. Labour force required Nil.
12. Whether the assistance from Central Government will be required. No.
13. Brief indication of further development ... Once the plans are prepared, the work of anti-erosion works, construction of works and tube wells will have to be undertaken.
14. Any other remarks Nil.

1.	Serial No. of Scheme	..	..	14.
2.	Name of Scheme	..	..	<i>District Experimental Farms.</i>
3.	Brief description of Scheme	..	..	<p>A Government Farm in each District which will serve the following purposes is a very essential item in Post War Development of Agriculture. This Farm will serve the following purposes:—</p> <p>(i) Experiments mainly in the form of testing out results of research from the main stations will be carried out.</p> <p>(ii) Seed multiplication.</p> <p>(iii) Cattle breeding, sheep breeding and poultry.</p> <p>(iv) Fruits and Vegetable nurseries.</p> <p>(v) Demonstration plots.</p> <p>(vi) Training of harris and subordinate staff of the Department.</p> <p>To serve all these purposes, the farm must have an area of not less than 3,000 acres. We have at present a big farm at Shorki in Karachi District and a number of small farms in other Districts. (Even Dokri and Sakrand farms are small considering their area which is about 500 acres each). This scheme therefore aims at developing Shorki, Sakrand and Dokri into District Experimental Farms and starting new farms in other five Districts.</p>
4.	Areas selected for application	..	..	The whole Province.
5.	Time expected to be taken for execution	..	..	5 years.
6.	Brief details of staff required and how staff is proposed to be obtained—			<p>8 officers In-charge in Class I Service.</p> <p>8 Mycologists in Class II Service.</p> <p>8 Entomologists in Class II Service.</p>

8	Live Stock Officers in Class II Service.	
8	Horticulturists in Class II Service.	
4	Commodity breeders in Class II Service.	
6	Chemists in Class II Service.	
6	Botanists in Class II Service.	
6	Agronomists in Class II Service.	
8	Microbiological Assistants Rs. 150—10—250.	
50	Graduate Assistants, grade I.	
84	Graduate Assistants, grade II.	
42	Graduate Assistants, grade III.	
96	Non-graduate Assistants.	
84	Laboratory Assistants.	
12	Blacksmiths.	
12	Carpenters.	
36	Mistries.	
8	Accountants.	
8	Assistant Accountants.	
14	Senior Clerks.	
98	Junior Clerks.	
8	Senior Store-keepers.	
6	Assistant Store-keepers.	
8	Librarians.	
8	Laboratory Assistants.	
132	Peons.	
56	Chowkidars.	

10. General description of plant, equipment, (1) To be obtained from abroad—
etc., required—

- 8 tractors.
- 6 Gas plants.
- 6 engines and pumps for tube wells.
- 7 electric generators.
- (2) To be obtained in India.
 - Laboratory apparatus.
 - Implements.
 - Workshop tools and plant.

11. Labour force required Nil.

12. Whether the assistance from Central Government will be required. Yes, for getting equipment and machinery from abroad.

13. Brief indication of further development .. Nil.

14. Any other remarks Nil.

15.	Survey of riverain areas.	There are certain areas on the banks of the Indus which are not com- manded by any canals, so that no cultivation is possible. Even though we know that such areas exist, there is no record where these areas are, what the soil is like and what can be grown in these areas if water can be lifted by pumps. It is, therefore, necessary to survey these areas and draw a plan of development. This will be done by a gazetted Agricultural Officer and gazetted Public Works Depart- ment officer working together for a period of six months.
4.	Areas selected for application	Banks of River Indus. Sukkur, Nawabshah Larkana, Dadu, Hyderabad and Karachi Districts.
5.	Brief details of staff required—	One Agricultural Officer, Class II. One Public Works Department Officer, Class II. One Typist. Four Peons.
6.	Time expected to be taken for execution	The staff will be recruited by deputation from the Departments concerned 6 months.
7.	Rough estimate of cost	(i) Capital Nil. (ii) Recurring— Pay of Officers Rs. 5,000 Pay of establishment 700 Allowances 3,300 Contingencies 1,000 Total 10,000 per annum.

Allowances—	..	..	..	3,300
Contingencies	..	..	..	1,000
	..	..	Total	10,000 per annum.

8. Extent to which the Scheme will be productive..

On production of plans of developments—additional areas will be brought under cultivation and Government will benefit by an increase in land revenue.

9. Extent to which the scheme will cater for returned service personnel.

Typist can be recruited for such personnel.

10. General description of plant and equipment, etc., required.

Nil.

11. Labour force required ..

Nil.

12. Whether the assistance from Central Government will be required. ..

No.

13. Brief indication of further development ..

On production of plans, further development will be undertaken.

14. Any other remarks ..

Nil.

1.	Serial No. of Scheme	..	..	16.
2.	Name of Scheme	..	..	<i>Manuring of crops, experiments as well as development plans.</i>
3.	Brief description of Scheme	..	..	There is a vast scope for increasing yields of all crops by manuring. The work is so important that it is necessary to entrust the work to a separate section to be newly created. This section will plan experiments to find out what manures are profitable, in what doses they should be applied, and in what periods. This section will then arrange for large scale field trials and it will also be in technical charge of planning developments. The manures that will be included in the scheme are :—

- (i) green manure,
- (ii) sulphate of ammonia,
- (iii) compost of farmyard manure,
- (iv) compost of town refuse,
- (v) developing production of oil cake manure,
- (vi) investigation into the use of fish manure.

The whole Province.

4.	Areas selected for application	..	..
5.	Time expected to be taken for execution	..	5 years.

6. Brief details of staff required and how staff is proposed to be obtained—

One Chief Chemist on special grade	Rs. 800—50—1,200.
Two Assistants Chemists, Class II.	
12 Graduate Assistants in grade I.	
20 Kamgars.	
One Head Clerk cum Accountant.	
One Senior Clerk.	
One Typist.	
One Junior Clerk.	
8 Peons.	
10 Laboratory boys.	

The gazetted staff will be recruited by advertisement.
The non-gazetted staff will be recruited by local selection.

7. Rough estimate of cost	Rs.
(i) <i>Capital</i> —	
Laboratory equipment and furniture ..	75,000
(ii) <i>Recurring</i> —	
Staff	60,000
Allowances	10,000
Contingencies	20,000
Total ..	40,000 per annum.

Note.—Cost of seed for green manure seeds, sulphate of ammonia for distribution, and subsidies for compost making has been included in Grow More Food Scheme.

Not directly to Government, but extensive manuring of crops will produce large additional quantities of agricultural products.
Clerical staff can be recruited from service personnel.

8. Extent to which scheme will be productive..
9. Extent to which scheme will cater for re-
turned service personnel.
10. General description of plant, etc. ..
11. Labour force required Nil.
12. Whether the assistance of Central Govern-
ment will be required. Nil.
13. Brief indication of further development .. Nil.
14. Any other remarks , .. Nil.

Laboratory equipment.

Serial No. of Scheme	Cotton Seed Distribution.
1. Name of Scheme	The price of cotton realised by grower depends very largely on the quality of the cotton. The variety of cotton grown must be good and it should be unimixed with other varieties. Very few growers can get their produce ginned separately so that the need for an organization to arrange for supply of pure seed of a good variety of cotton becomes obvious. The area under cotton in Sind will be about 1 million acres in post-war years. 4,00,000 Maunds of seed will be required to cover this area. This seed will be grown by B Class growers in 80,000 acres. Government Farms and A Class growers will grow seed in 6,000 acres for B Class growers. This scheme envisages no separate staff for cotton seed distribution. The work will be done by District Staff.
2. Brief description of scheme	

be done by District Officer, Karachi District.

		Rs.
4. Areas selected for experiment ..	5 years.	
5. Time expected to be taken for execution ..	Nil.	15,000
6. Staff required ..	(i) Capital ..	..
7. Rough estimate of cost ..	(ii) Recurring—	..
	Cost of seed ..	24,00,000
	Gunny bags ..	3,00,000
	Transport charges ..	1,50,000
	Premium to growers ..	3,00,000
	Contingencies ..	50,000
	Total ..	32,00,000

Cost of seed and gunny bags will be recovered. If market rate of cotton seed at sowing time is good, part of the expenditure on premium and transport can also be recovered.

8. Extent to which the scheme will be productive.

9. Extent to which the scheme will cater for services personnel. Nil.
10. General description of plant, etc. .. Nil.
11. Labour force required , .. Nil.
12. Whether the assistance from Central Government will be required. Nil.
13. Brief description of further development in succeeding five year periods. Nil.
14. General remarks, if any .. Nil.

8. Extent to which the scheme will be productive. Not directly to Government, but 50,000 acres in the first year increasing upto 2,50,000 acres in the fifth year will be grown. The bidi tobacco will be profitable to zamindars. The cost of seed will be recovered.

9. Extent to which scheme will cater for re-turned service personnel. Nil.

10. General description of plant, equipment, etc. Nil.

11. Labour force required ... Nil.

12. Whether the assistance of the Central Government will be required for obtaining material and personnel. Nil.

13. Brief indication of further development in succeeding five year periods. The area under tobacco is bound to expand as it is profitable crop.

14. Any other remarks ... Nil.

	Serial No. of Scheme	Name of Scheme	Brief description of scheme	19.	Building of seed stores.	
1.	..	..	..	..	It is essential that seed is distributed by Government, and also that manures and implements should be made available to zamindars at their doors. For this purpose, it is necessary to have a large number of seed depots all over the Province. We will have 200 of these depots in the five years of the plan. It is impossible to get suitable buildings on rent in the small towns and villages for our depots. It is necessary to build such depots. Each depot must have accommodation to store 3,000 maunds of seed and manures. A building with raised plinth, cement floor, katcha walls and katcha roof will cost about Rs. 6,000.	
4.	Areas selected for application	..	..	..	All over the Province.	
5.	Time expected to be taken for execution	..	..	..	5 years.	
6.	Brief details of staff required	..	..	..	Nil.	
7.	Rough estimate of cost	..	..	..	(i) Capital 12,00,000 (ii) Recurring (for repairs) 10,000 a year.	
8.	Extent to which the scheme will be productive.				Not directly to Government but it will save us rent to the tune of Rs. 1,20,000 p. a.	
9.	Extent to which scheme will cater for returned service personnel.				Nil.	
10.	General description of plant, etc.	..	..	..	Nil.	
11.	Labour force required	..	..	..	Nil.	
12.	Whether the assistance from Central Government will be required.				Nil.	
13.	Brief indication of further development	..	..	..	Nil.	
14.	Any other remarks	..	..	..	Nil.	

1.	Serial No. of Scheme	..	..	..	..
2.	Name of Scheme	..	..	..	<i>Organization of local manufacture of agricultural implements.</i>
3.	Brief description of scheme	..	..	..	In any plan of development of agriculture, it is essential to assure a sufficient supply of iron and steel for manufacture of agricultural implements. There are two ways of supplying the demands of cultivators for implements— (1) Manufacture at a central place, and distribution all over the Province. (2) Distribution of iron and steel to local manufacturers who will manufacture implements for sale in the locality. The second method is more suitable. It is then necessary to assure sufficient supply of iron and steel to all the local manufacturers. This work is now being handled by the Agricultural Engineer, but it is necessary, in order to carry out the work satisfactorily, that a Mechanical Assistant should be put in charge of this work. He will see that all blacksmiths receive their requirements of iron and steel in time. He can also supply these blacksmiths with improved machinery for manufacture according to their demand. He will also persuade blacksmiths to standardize ploughs and such other articles so that spare parts can be manufactured and kept ready for immediate sale. Government should lend money at nominal rates to the blacksmiths for purchasing full equipment for manufacture. The blacksmiths in the bigger towns will be persuaded to equip themselves in such a way that they can handle even tractor repairs.
4.	Areas selected for application	..	..	..	The whole Province.
5.	Time expected to be taken for execution	..	..	..	Immediate.
6.	Brief details of staff required—	..	..	..

One Mechanical Assistant Rs. 200—10—300.
One Account Clerk Rs. 80—5/2—95.

Rs.

7.	Rough estimate of cost ..	..	(i) <i>Capital</i> (furniture, etc.) ..	..	1,000
		..	(ii) <i>Recurring</i> —Staff—Pay and Allowances ..	..	6,000 per annum.
8.	Extent to which the scheme will be productive.		Not directly to Government, but the supply of cheap implements to cultivators will enable them to improve the cultivation.		
9.	Extent to which scheme will cater for returned service personnel.		The staff can be recruited from service personnel.		
10.	General description of plant, equipment, etc.		Lathes, drills, etc. as per requirements of blacksmiths.		
11.	Labour force required ..	..	Nil.		
12.	Whether the assistance of the Central Government will be required.		Yes, the assistance of the Central Government will be required for getting machinery.		
13.	Brief indication of further development in succeeding five-year periods.		Nil.		
14.	Any other remarks ..	..	Nil.		

1.	Serial No. of Scheme	..	..	..
2.	Name of Scheme	..	..	..	<i>Running of 30 tractors by the Government for zamindari lands on hire.</i>
3.	Brief description of Scheme	..	..	..	Tractor ploughing has to be encouraged in Sind to the maximum extent for the following reasons:— (1) Tractor ploughing increases the productivity of the soil. (2) It is the only means of bringing into cultivation land ever grown with heavy weeds. (3) Due to scarcity of labour in Sind, tractor ploughing will enable more area to be put under cultivation than at present. The ideal should be that the Government should do all the ploughing required by zamindars and the same time demonstrate to zamindars the profit in undertaking the routine ploughing of land also by tractors. For such routine ploughing disc harrows would ordinarily be sufficient. Government should purchase and run 30 tractors for this purpose.
4.	Areas selected for application	..	..	..	The whole Province.
5.	Time expected to be taken for execution	..	..	..	Immediate.
6.	Brief details of staff required—				

One Assistant Engineer, Class I Service.
 Five Mechanical Assistants, Rs. 120—10—300
 Four Accountants, Rs. 120—5—170.
 Four Store-keepers, Rs. 80—5/2—95.
 Eight Junior Clerks, Rs. 25—5/2—55.
 Eight peons.
 Thirty tractor drivers.
 Thirty tractor mechanics.
 Thirty cleaners.

	Rs.
Cost of 30 tractor outfits ..	15,00,000
Trailors, oil drums, etc. ..	2,00,000
Total ..	17,00,000

(i) *Capital—*

Cost of 30 tractor outfits ..
Trailors, oil drums, etc. ..

(ii) *Recurring—*

Staff 55,000
Contingencies (including running cost of
tractors, pay of tractor drivers and
mechanics and office contingencies .. 3,00,000

Total .. 3,55,000 per annum.

The income from tractor ploughing will be

as follows:—

10,000 acres heavy ploughing .. 1,20,000
40,000 acres ordinary ploughing .. 2,00,000

Total .. 3,20,000 per annum.

Engineers, Mechanics, drivers and clerical staff can be recruited from returned service personnel.

30 tractor outfits.

Tractor ploughs and spare parts for the tractors.

Nil.

Yes, assistance of the Central Government will be required to purchase the equipment mentioned at item 10.

Nil.

Nil.

tive.

Extent to which scheme will cater for returned service personnel.

General description of plant, equipment, etc.

Labour force required

Whether assistance of Central Government will be required

Brief indication of further development

Any other remarks

1.	Serial No. of Scheme	..	22.																																														
2.	Name of Scheme	<i>Opening of eight tractors servicing and repairing stations.</i>																																													
3.	Brief description of the Scheme	It is our object to encourage zamindars to buy their own tractors. Zamindars will not do so unless they are assured of facilities for servicing and repairing the tractors. We must therefore open servicing and repairing stations at least in each District Headquarter. These District servicing stations will also be useful to us for repairing 30 departmental tractors. It is not possible to repair such large number of tractors in the agricultural workshop which is at present dealing only with four tractors. We are at present losing a lot of time in transporting damaged parts over a long distance to Hyderabad (Sind) and sending them back after repairs.																																													
4.	Areas selected for application	The whole Province.																																													
5.	Time expected to be taken for execution	Immediate.																																													
6.	Brief details of staff required—			8 Mechanical Assistants Rs. 200—10—300.																																													
7.	Rough estimate of cost	<table> <tr> <th><i>Capital—</i></th><th></th><th></th><th></th><th>Rs.</th></tr> <tr> <td>Machinery tools and accessories</td><td>..</td><td>..</td><td>..</td><td>2,40,000</td></tr> <tr> <td>Buildings and Lands</td><td>..</td><td>..</td><td>..</td><td>1,60,000</td></tr> <tr> <td></td><td></td><td></td><td></td><td><hr/></td></tr> <tr> <td><i>Recurring—</i></td><td></td><td></td><td></td><td>4,00,000</td></tr> <tr> <td>Staff, pay and allowances</td><td>..</td><td>..</td><td>..</td><td>24,000</td></tr> <tr> <td>Contingencies (including labour, stores and a clerk cum-storekeeper)</td><td>..</td><td>..</td><td>..</td><td>1,00,000*</td></tr> <tr> <td></td><td></td><td></td><td></td><td><hr/></td></tr> <tr> <td>Total</td><td>..</td><td>..</td><td>..</td><td>1,24,000 per annum.</td></tr> </table>	<i>Capital—</i>				Rs.	Machinery tools and accessories	2,40,000	Buildings and Lands	1,60,000					<hr/>	<i>Recurring—</i>				4,00,000	Staff, pay and allowances	24,000	Contingencies (including labour, stores and a clerk cum-storekeeper)	1,00,000*					<hr/>	Total	1,24,000 per annum.
<i>Capital—</i>				Rs.																																													
Machinery tools and accessories	2,40,000																																													
Buildings and Lands	1,60,000																																													
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Contingencies (including labour, stores and a clerk cum-storekeeper)	1,00,000*																																													
				<hr/>																																													
Total	1,24,000 per annum.																																													

* Stock of spare parts amounting to Rs. 10,000 at each station will be kept but as the parts are to be sold for cash value, the amount required will only be a loan from Government and is not shown here.

8.	Extent to which the scheme will be productive.	Zamindars will be charged for repairs and servicing and income will be a lac of rupees per year.
9.	Extent to which the scheme will cater for returned service personnel.	All the mechanical assistants can be recruited from service personnel.
10.	General description of plant, equipment, etc.	Lathes, drills, etc.
11.	Labour force required	Nil.
12.	Whether the assistance from Central Government will be required.	Yes, assistance of the Central Government will be required to obtain the machinery.
13.	Brief indication of further development	Nil.
14.	Any other remarks	Nil.

o. of Scheme 23.

2. Name of Scheme *Training of tractor drivers and mechanics.*

3. Brief description of the Scheme.. .. There will be a great demand for tractor drivers, tractor mechanics, and mechanics for oil engines when our plan comes into execution. It is therefore proposed to train a large number of mechanics and drivers. 30 mechanics will be trained each year, 15 in the Agricultural Workshop and 15 in the Agricultural College. Mechanics will also be given training for a period of two months with the Government tractors. The mechanics under training will have to be paid scholarships.

4. Areas selected for application The whole Province.

5. Time expected to be taken for execution .. Immediate.

6. Brief details of staff required— .. 2 Mechanical Assistants Rs. 200—10—300.

7. Rough estimate of cost *Capital* Nil.

Recurring—

Staff, pay and allowances	Rs.
Scholarships of the candidates at 40 per month	7,000
Contingencies	15,000
	1,000

Total .. 23,000 per annum.

8. Extent to which the scheme will be productive. Not directly to Government. Without a sufficient supply of mechanics and drivers it will not be possible to carry out our plan of agriculture development.

9. Extent to which the scheme will cater for returned service personnel. Two mechanical Assistants can be recruited from service personnel.

- | | | | |
|-----|--|----------------|------|
| 10. | General description of plant, etc. | .. | Nil. |
| 11. | Labour force required | .. | Nil. |
| 12. | Whether the assistance of Central Government will be required. | Government No. | |
| 13. | Brief indication of further development. | .. | Nil. |
| 14. | Any other remarks | ... | Nil. |

1. Serial No. of Scheme	..	
2. Name of Scheme	..	<i>Transfer of the Agriculture College to Hyderabad, Sind.</i>
3. Brief description of the Scheme	..	The location of Agriculture College at Sakrand is considered by every one to be unsuitable. It is impossible to attract a sufficient number of students to enter the Agriculture College situated at the corner of the Province, difficult of access even by rail and completely devoid of amenities of life to which College students are used to. To execute any plan of agriculture development, a supply of adequate number of trained men is essential. We cannot hope to attract a sufficient number of men to the Agriculture College at Sakrand unless the College is shifted to more congenial locality. It is, therefore, proposed to shift the College to vicinity of Hyderabad which is the most suitable place in Sind.
4. Areas selected for application	..	Hyderabad (Sind).
5. Time expected to be taken for execution	..	Immediate.
6. Brief details of staff required	..	Nil.

7. Rough estimate of cost—
The existing staff of the College will be shifted to this College.

Capital—

	Rs.
Land	Nil.*
*The college can be located in the District Experimental Farm, land for which has already been provided.	
Buildings	8,00,000
Equipment	1,00,000
(additional to what there is in the College).	
Total	9,00,000

Recurring—

	Rs.
Staff, pay and allowances (includes the present cost of staff).	.. 1,30,000
Contingencies .. ..	.. 68,000
(includes the present contingencies).	
Scholarships to students .. ..	.. 1,50,000
Total ..	3,48,000 per annum.

Not directly to Government, but training of an adequate personnel is essential for execution of a plan.

- | | |
|--|---|
| 8. Extent to which the Scheme will be productive. | Not directly to Government, but training of an adequate personnel is essential for execution of a plan. |
| 9. Extent to which the scheme will cater for returned service personnel. | Nil. |
| 10. General description of plant, equipment, etc | Nil. |
| 12. Labour force required | Nil. |
| 11. Whether the assistance of Central Government will be required. | Yes. The assistance of Government of India will be required for getting a release of iron and cement for the buildings. |
| 13. Brief indication of further development .. | Nil. |
| 14. Any further remarks | Nil. |

1. Serial No. of Scheme
2. Name of Scheme
3. Brief description of the Scheme
4. Areas selected for application
5. Time expected to be taken for execution
6. Brief details of staff required—

60 Non-graduates, grade (to be revised—

Rs. 40—3—70).

60 Jamadars—Rs. 30—2—50.

60 Malhis—Rs. 30—2—50.

60 Chowkidars.

Rough estimate of cost	Capital—	Rs.
..	Land	..
..	Development	.. 18,00,000
..	Buildings	.. 2,40,000
..	Live-stock	.. 6,00,000*
..	Dead stock and implements	.. 2,00,000
..	..	.. 60,000
Total ..		29,00,000

*At district headquarters and at headquarters of Inspectors of Agriculture, their offices and residences will also be placed inside this sub-station. The cost of these buildings will be 4 lacs.

Recurring—

Staff, pay and allowances	Rs.
Contingencies	Rs.
..	.. 1,50,000
..	.. 4,00,000

Total ... 5,50,000 per annum.

8. Extent to which the Scheme will be productive. Each station will yield an income by sale of products. This will be about 3 lacs of rupees.

9. Extent to which Scheme will cater for re-turned service personnel. Nil.

10. General description of plant, etc. .. Nil.

11. Labour force required .. Nil.

12. Whether assistance of Central Government is required. Nil.

13. Brief indication of further development .. Nil.

14. Any other remarks .. Nil.

1. Serial No. of Scheme .. 26.
 2. Name of Scheme ..
 3. Brief description of Scheme ..
- Survey of Desert Talukas for construction of tanks.*
 The Desert Talukas of Thar Parkar District, depend entirely on rain for cultivation. If late rains are deficient the crops will suffer. It is possible to put bunds across valleys and collect rain-water. Such tanks can be used for irrigating crops, if needed. These tanks will serve another useful purpose of providing drinking water to cattle. Most of the area in the desert is sandy and bunding may not be useful as the impounded water will disappear underground. But in certain areas the subsoil layers may be hard. It is for finding such areas with hard subsoil, a big catchment area, a fairly big basin to hold the water and a large cultivated area nearby which can be irrigated, that a survey is required. It will take 12 months. An engineer shall do it.

Thar Parkar District.

4. Areas selected for application ..
 5. Time expected to be taken for execution ..
 6. Staff required ..
- One Engineer, Class I.
 One Typist Rs. 25—5/2—55 (starting pay Rs. 40 p.m.)
 Two peons.

The Engineer will be borrowed from Public Works Department and the other staff selected locally.

Rs.
Nil.

(i) Capital
(ii) Recurring—

7. Rough estimate of cost
 8. Extent to which the Scheme will be productive.
 9. Extent to which it will cater for services personnel.
- | | | |
|-----------------------------|----|-------------------|
| Pay and Allowances | .. | 14,000 |
| Contingencies | .. | 1,000 |
| Not directly to Government. | .. | |
| Nil. | | |
| Total | .. | 15,000 per annum. |

- | | | | |
|-----|--|---|------|
| 10. | General description of plant, etc. | .. | Nil. |
| 11. | Labour force required | .. | Nil. |
| 12. | Whether the assistance from Central Government is required. | .. | Nil. |
| 13. | Brief indication of further development in succeeding five-year periods. | After the survey is over, the construction of tanks will be undertaken. | |
| 14. | General Remarks, if any | .. | Nil. |

1.	Serial No. of Scheme	..	..	27.
2.	Name of Scheme	..	..	<i>Conservation of hay in Desert Talukas.</i>
3.	Brief description of the Scheme	..	..	<p>The desert talukas of Thar Parkar District have one of the best breeds of cattle. This tract is dependent on precarious rainfall for cultivation. In years of sub-normal rainfall it is subject to famine. In such years a large number of valuable cattle die. It is possible to save some of these cattle by cutting grass in normal years and storing the same for use in famine years. In this scheme it is proposed to open 4 Centres for storing hay in the Desert Talukas. These Centres are for purposes of demonstration. An area of 3,000 acres will be acquired in each Centre. Grass from this area will be cut and stored. About 5 maunds of hay per acre will be collected. The total storage will be 75,000 maunds per year. It is hoped that after seeing the working of these Centres the villagers will start their own storages of hay. These Centres will be placed near Taluka headquarters. The Overseers and Propaganda staff of the Taluka will look after these Centres. Only Chowkidars will be necessary.</p>
4.	Areas selected for application	..	..	Four Desert Talukas of Thar Parkar District.
5.	Time expected to be taken for execution	..	..	Immediate.
6.	Staff required	..	..	24 Chowkidars.
7.	Rough estimate of cost	..	..	(i) <i>Capital</i> —
				Rs.
				Land 1,20,000
				Buildings 10,000
				<hr/> Total .. 1,30,000 <hr/>
				(ii) <i>Recurring</i> 50,000 per annum.

8. Extent to which the Scheme will be productive.	The Scheme will be productive to Government as the hay is expected to fetch Rs. 60,000 against recurring expenditure of Rs. 50,000.
9. Extent to which it will cater for services personnel.	Nil.
10. General description of plant, etc.	Nil.
11. Labour force required	Nil.
12. Whether the assistance from Central Government is required.	Nil.
13. Brief description of further development, etc.	Nil.
14. Any other remarks	Nil.

1.	Serial No. of Scheme	..	..	28.
2.	Name of Scheme	..	..	<i>Creation of a post of Animal Husbandry Professor in the Agricultural College</i>
3.	Brief description of Scheme	..	..	There is no Professor of Animal Husbandry in the Sakrand College now. This Scheme is put in on the suggestion of the Agricultural Advisor.
4.	Areas selected for application	..	..	Whole Province.
5.	Time expected to be taken for execution	..	..	Immediate.
6.	Staff required	..	..	One Professor of Animal Husbandry, Class I. One Peon.
7.	Rough estimate of cost	..	..	To be recruited through Public Service Commission. (i) <i>Capital</i> Nil. (ii) <i>Recurring</i> Rs. 7,000 per annum.
8.	Extent to which it will cater for services personnel.	..	..	Nil.
9.	Extent to which the Scheme will be productive.	..	..	Nil.
10.	General description of plant, etc.	..	..	Nil.
11.	Labour force required	..	..	Nil.
12.	Whether the assistance from Central Government is required.	..	..	Nil.
13.	Brief description of further development in succeeding five-year periods.	..	..	Nil.
14.	Any other remarks	..	..	Nil.

29. *Re-organization of Agriculture Economists' Section.*

Agriculture economics is an important subject. At present there is only a Class II Professor in economics with one Assistant to teach this subject in the College. No survey work is being done. It is necessary to collect the detailed information about the cost of cultivation, trends of prices, earnings of cultivators, cost of living comparative profitableness of different crops and possibilities of spare time occupations. Without such information at our command, it is very difficult to prepare any development plans. It is therefore proposed to put the Agriculture Economists' section under a Class I Professor of Economics. The existing Class II Professor will be continued as an Assistant Professor. Agriculture surveys will be carried out under the supervision of Professor of Agriculture economics. He will require a competent Head Clerk to be put in charge of the planning of surveys and publications of the same. To begin with, the survey section will have 4 Investigators in II grade.

Whole Province.

Immediate.

One Class I Professor, to be selected by the Public Service Commission.
One Head Clerk, Rs. 160—10—260, to be selected by advertisement.
Four Investigators, Rs. 110—8—150, to be selected by advertisement.
Two Clerks, Rs. 25—5/2—55, by local selection.

Six peons.

(i) *Capital.*

(ii) *Recurring—*

Pay and Allowances

Recurring—Contingencies

Cost of Publications of Surveys

Rs.

1,000

20,000

2,000

2,000

Total

24,000 per annum.

4. Areas selected for application

5. Time expected to be taken for execution

6. Staff required

7. Rough estimate of cost

8. Extent to which it will be productive .. The only income to Government from the scheme will be from sale of the publications. This will be about Rs. 2,500 a year.
9. Extent to which it will cater for service personnel. The Clerical staff can be recruited from such personnel.
10. General description of plant, etc. .. Nil.
11. Labour force required Nil.
12. Whether the assistance from Central Government is required. Nil.
13. Brief description of further development, etc. Nil.
14. Any other remarks Nil.

1. Serial No. of Scheme	..	..	30.
2. Name of Scheme	..	..	<i>Training of "Malhis."</i>
3. Brief description of Scheme	..	..	There is a great scarcity of trained malhis in Sind. This is going to be the bottleneck in expansion of fruit and vegetable areas. It is therefore imperative that we start training courses for malhis immediately and on as big a scale as possible. Malhi classes will be conducted at Sakrand, Dokri and Mirpurkhas in Government Farms and also in three private orchards. 100 candidates will be trained in these 6 places every year. The course will be of 9 months duration.

4. Areas selected for application	..	..	Whole Province.
5. Time expected to be taken for execution	..	..	Immediate.
6. Brief details of staff required	..	..	6 Graduate Assistants—III Grade. They will be recruited by local selection. 6 pcons.

7. Rough estimate of cost	..	..	(i) <i>Capital</i> —Rs.
		..	Buildings 75,000
		..	Class room and hostel 4,000
		..	100 sets of garden tools 2,000
		..	Furniture
		Total ..	81,000

(ii) <i>Recurring</i> —		
Pay and allowances	..	10,000
100 scholarships at 25×9×100	..	22,500
Contingencies ..	..	1,500
Total ..	..	34,000 per annum.

8. Extent to which it will be productive .. Nil.
9. Extent to which it will cater for returned service personnel. Nil.
10. General description of plant, etc. .. Nil.
11. Labour force required .. Nil.
12. Whether the assistance from Central Government will be required. Nil.
13. Brief description of further development, etc. Nil.
14. General remarks, if any .. Nil.

1.	Serial No. of Scheme	..	..	31.	
2.	Name of Scheme	..	..	..	<i>Supply of Sprayers and insecticides to cultivators.</i>
3.	Brief description of Scheme	..	..	..	It is necessary to provide protection for crops against insect attacks. The protection now afforded is almost nil. After the post-war plan is put into operation there will be an entomologist in each District Farm whose duty it will be to take action against insect pests in the District. It is proposed to place with him and the Taluka Overseers certain equipment and chemicals for free use by cultivators against insect attacks.
4.	Areas selected for application	..	..	..	Whole Province.
5.	Time expected to be taken for execution	..	..	..	Immediate.
6.	Staff required	..	..	..	Nil.
7.	Rough estimate of cost	..	..	..	Rs.
					(i) <i>Capital</i> 75,000
					(ii) <i>Recurring</i> —
					Chemicals 5,000
					Labour 5,000
					Repairs to equipment and replacement 2,000
					Total 12,000 per annum.
8.	Extent to which it will be productive	..	..	..	Not directly productive, but the saving of crops will amount to lakhs of rupees in a year.
9.	Extent to which it will cater for returned service personnel.	..	..	..	Nil.
10.	General description of plant, etc.	..	..	..	Nil.
11.	Labour force required	..	..	..	Nil.
12.	Whether the assistance from Central Government will be required.	..	..	..	Nil.
13.	Brief description of further development, etc.	..	..	..	Nil.
14.	General remarks, if any	..	..	..	Nil.

1.	Serial No. of Scheme	..	..	32.	
2.	Name of Scheme	..	..		<i>Post Graduate training of staff.</i>
3.	Brief description of Scheme	..	..		The quality of the staff must be improved if the post-war plans are to be properly operated. Such an improvement can be effected by post-graduate training. It is proposed to send six men abroad every year and depute 11 men to the Imperial Agricultural Institute, Delhi, every year for post-graduate studies. Scholarships will have to be paid to them.
4.	Areas selected for application	..	..		Whole Province.
5.	Time expected to be taken for execution	..	..		Five years.
6.	Staff required	..	..		Nil.
7.	Rough estimate of cost	..	..		(i) <i>Capital</i> Nil. (ii) <i>Recurring</i> Rs. Six scholarships at Rs. 500 a month for two years. 72,000 Six passages 6,000 Eleven scholarships at Rs. 60 a month for two years 16,000
8.	Extent to which it will be productive	..	..		Nil.
9.	Extent to which it will cater for returned service personnel.	..	..		Nil.
10.	General description of plant, etc.	..	..		Nil.
11.	Labour force required	..	..		Nil.
12.	Whether the assistance from Central Government is required.	..	..		Nil.
13.	Brief description of further development, etc.	..	..		Nil.
14.	General remarks, if any	..	..		Nil.
					Total 94,000 per annum.

1.	Serial No. of Scheme	...	..	..	33.
2.	Name of Scheme	..	..	..	<i>Re-organisation of Publicity Section.</i>
3.	Brief description of Scheme	..	..	..	Publicity is one of the most important items of work of the Department. It has not been paid the attention due to it. If the results of research have not yet reached the villages and if the cultivators do not show sufficient interest in improvement of cultivation, the fault can be traced to poor publicity. When an attempt is made to change habits of a life time, to introduce new ideas and to overcome mass inertia it is essential to have publicity and continuous publicity. It is proposed to have a Class II Officer as head of the publicity section. There will be an Inspector of Publicity for each District. He will, however, work in only one Taluka of a District so as to concentrate the publicity. Each Inspector will have a mobile cinema unit. He will also have a motor truck to take the cinema outfit and other publicity material on tour. He will also have a library of books and magazines on Agricultural subjects which can be borrowed by zamindars. A Provincial Agricultural exhibition will be held once a year. Each District will also have an annual agricultural exhibition. The Publicity Officer will also arrange for publication of posters, charts, leaflets, newspaper articles and books. A competent film director should be hired to prepare 25 films on topics suitable for exhibition to villagers. Films from Kodak Co. and other sources should also be hired for exhibition to villagers. Other Departments like Public Health and Co-operative Societies should participate in cinema publicity.
4.	Area selected for application	..	..	..	Whole Province.
5.	Time expected to be taken for execution	..	..	..	5 years.

6. Brief details of staff required One Class II Officer—to be recruited through Public Service Commission.
 Eight Graduate Assistants, II grade—To be recruited by selection.
 One Graduate Assistant, III grade—by selection.
 One Senior Clerk—by selection.
 One Junior Clerk—by selection.
 One Typist—by selection.
 Two peons—by selection.
 16 Machine Drivers—by selection.
 Eight Cleaners—by selection.
 Eight Kamgars—by selection.
7. Rough estimate of cost
- | | Rs. |
|---|-------------------|
| (i) <i>Capital</i> | |
| (ii) <i>Recurring</i> | |
| 8 Motor Vans | 80,000 |
| 8 sets of equipment including cinema outfits.. | 60,000 |
| Expenses of filming 25 films including pay of Film Director | 20,000 |
| Total .. | 1,60,000 |
| Pay and Allowances | 70,000 |
| Running and upkeep of machines | 12,000 |
| Contingencies | 12,000 |
| Total .. | 94,000 per annum. |
8. Extent to which the Scheme will be productive. Nil.
9. Extent to which the Scheme will cater for returned service personnel. The Mechanical and Clerical Staff can be recruited from service personnel.

10. General description of plant, equipment, etc
- Eight Motor Vans, 29-30 H. P. complete with roof and closed body.
 Eight tents 12' X 12' square shape weight about 6-0 Mds. for staff.
 Eight sets of implements.
 Eight sets of charts.
 Eight sets of seed exhibits boxes.
 48 folding chairs.
 48 folding teapoy.
 80 wooden boxes for loading machinery and other kit.
 Eight buckets.
 Eight hurricane lamps.
 Eight petromax lamps.
 Eight Daris 15' X 15'.
 Eight tarpoline 15' X 21'.
 Eight generators 110 volts 400-600 watt.
 Eight projectors kodascope Model E. E.
 Eight amplifiers with sets of loud speakers complete with cabinets.
 Eight microphone with stands.
 Eight electric soldering rods 220 volts.
 16 projector bulbs of 400 watt.
 16 dozen electric bulbs 110 volt.
 Eight gramophones with pick up and special cabinet.
 Eight electric transformers.
 Eight sets of wiring and switchboard.
 Eight sets of library books, magazines, etc.
 Eighty movie film reels.
 200 gramophone records.
11. Labour force required Nil.
 12. Whether the assistance from Central Government is required to obtain the plant and equipment. Nil.
13. Brief indication of further development, etc. Nil.
 14. General remarks, if any Nil.

1.	Serial No. of the Scheme	..	..	34.
2.	Name of Scheme	..	..	<i>Extra Staff that will be required for Administrative organization under the Post War Reconstruction.</i>
3.	Brief description of the Scheme	..	..	In addition to staff that has been provided for Grow More Food Campaign Scheme; vide Scheme No. 35. Some more posts will be required for Administrative reorganization when the execution of plan commences.
4.	The area selected for application..	..	..	The whole Province.
5.	Time expected to be taken for execution	..	..	Immediate.
6.	Staff required ..	..	..	3 Assistant Directors, Class II (Officers). 1 Principal for Agricultural College—Selection grade of Class I. 2 Assistant Agricultural Engineers, Class II service. 3 Superintendents (Office) Rs. 200—10—260.
7.	Rough Estimate of cost—			(i) <i>Capital</i> Nil. (ii) <i>Recurring</i> Pay and allowances—Rs. 50,000 per annum.
8.	Extent to which the Schemes will be productive.			Nil.
9.	Extent to which the Scheme will cater for returned service personnel.			Nil.
10.	General description of plant, equipment, etc.			Nil.
11.	Labour Force required. ..	..	..	Mil.
12.	Whether the assistance from Central Government will be required.			Nil.
13.	Brief indication of further development, etc.			Nil.
14.	General remarks, if any	..	..	Nil.

1.	Serial No. of Scheme	..	..	35.
2.	Name of Scheme	..	..	<i>Grow More Food.</i> Additional Staff required.
3.	Brief description of Scheme	..	..	District staff as well as office staff require to be strengthened in order to carry on the Grow More Food Campaign efficiently and successfully. The following are the requirements:—

(i) A Joint Director of Agriculture is required and office of the Director of Agriculture will require to be organized.

(ii) We require a Superintendent of Agriculture in Class II service in-charge of each Revenue District. The existing two Deputy Directors of Agriculture will be placed over the Superintendents of Agriculture to supervise and guide the work. There will be an Inspector per Revenue Sub-division, an Overseer per Taluka and 5 Kamgars per Taluka. Sufficient office staff will have to be provided for divisional officers.

(iii) There is an urgent need to strengthen the Entomological and Mycological sections. It is no use sowing more area if crops are not protected against pests and diseases.

(iv) There is also an urgent need to increase the staff in Horticultural section.

(v) Additional district staff required will have to be trained. It will be essential to admit every year 30 students for degree course and 50 for Diploma course. More teaching staff will therefore be necessary in the Agricultural College. Small equipped medical and Veterinary Hospitals are also necessary for the College.

(vi) Publicity section requires to be strengthened.

4. Areas selected for application The whole Province.
5. Time expected to be taken for execution Immediate.
6. Brief details of staff required and how staff
is proposed to be obtained. *Selection grade posts—*
One Joint Director.

Class I—

Horticulturist.

Class II—

- | | |
|-----|------------------------------------|
| 1 | Statistician. |
| 1 | Office Superintendent. |
| 6 | Superintendents of Agriculture. |
| 1 | Assistant Professor for Chemistry. |
| 1 | Entomologist. |
| 1 | Mycologist. |
| 1 | Publicity Officer. |
| 1 | Vegetable Specialist. |
| 4 | Graduate Assistants in I grade. |
| 19 | Graduate Assistants in II grade. |
| 37 | Graduate Assistants in III grade. |
| 9 | Accountants. |
| 2 | Assistant Accountants. |
| 4 | Senior Auditors. |
| 5 | Junior Auditors. |
| 15 | Senior and Accounts Clerks. |
| 34 | Junior clerks. |
| 1 | Assistant Head Clerk. |
| 4 | Storekeepers. |
| 4 | Typists. |
| 6 | Non-Graduate Assistants. |
| 254 | Kamgars. |
| 5 | Mechanics. |

- 3 Laboratory Assistants.
 68 Inferior staff.
 1 Sub-Assistant Surgeon.
 1 Veterinary Assistant.
 2 Compounders.
 2 Dressers.
 2 Beshties.

To be recruited by either selection or through Public Service Commission.

Rs.

(i) *Capital*—
 Land, buildings, machinery and furniture .. 1,90,700

(ii) *Recurring*—
 Pay and allowances 4,66,874
 Contingencies 1,48,890

Total .. 6,15,764 per annum.

122

Not directly productive to Government but it will be possible to do the work on proper lines resulting in prosperity of the Province.

7. Rough estimate of cost
8. Extent to which the scheme will be productive.
9. Extent to which the Scheme will cater for returned service personnel.
10. General description of plants and equipment, etc., required.
11. Labour force required
12. Whether the assistance from the Central Government is required for obtaining material.
13. Brief indication of further development in succeeding five year periods.
14. Any other remarks or information ..

Pumping plants and cold storage equipment.

Nil.

Assistance of Central Government is necessary for obtaining Pumping plants, etc.

Nil.

Nil.

1. Serial No. of Scheme 36.
2. Name of Scheme *Grow More Food.* Training of the additional staff.
3. Brief description of the Scheme Additional staff required will have to be trained to make them available for increased activities of the department in connection with Grow More Food Campaign. 58 graduate, 160 diploma holders and 99 kamgars will be required. Scholarship at the rate of Rs. 50 per mensem for degree candidates, Rs. 30 per mensem for diploma candidates will have to be offered. Additional hostels, residential quarters for staff, store dairy, implement sheds and equipment will be needed. Students and mechanics will have to be trained in manipulation of simple mechanic tools and to attend to repairs to tractors and other forms of machinery. So a workshop and two sets of tractor outfits are also required.

4. Areas selected for application The whole Province.

5. Time expected to be taken for execution .. Immediate.

6. Brief details of staff required and new staff is proposed to be obtained.

1 Mechanical Assistant
1 Store-keeper
1 Time-keeper
1 Clerk
1 Peon

} Required for workshop, suitable men
} will be appointed by selection.

7. Rough estimate of cost

(i) *Capital*—

Buildings ..
Machinery ..
Equipment ..

Rs.

.. 2,51,000
.. 1,00,000
.. 71,000

4,22,000

(ii) <i>Recurring—</i>		Rs.
Pay and allowances	..	5,000
Contingencies	..	53,320
Scholarships	..	85,000
Total		1,43,320 per annum.

8. Extent to which the Scheme will be productive. Not directly productive to Government, but the training of staff will produce right type of people resulting in indirect benefit to the country.
9. Extent to which Scheme will cater for .. Nil.
returned service personnel.
10. General description of plant, equipment Two tractor outfits complete with implements and accessories, workshop etc., required. machinery and tools.
11. Labour force required Nil.
12. Whether the assistance of the Central Gov- Assistance of Central Government is required to obtain tractors, imple-
ernment is required for obtaining material ments and workshop machinery.
13. Brief indication of further development in Nil.
succeeding five-year periods.
14. Any other remarks or information .. Nil.

1. Serial No. of Scheme .. 37

2. Name of Scheme ..

3. Brief description of the Scheme .. *Grow More Food.* Seed Multiplication and Distribution of food crops.

At present there is no organised Seed Multiplication and Distribution Scheme in Sind. It is therefore proposed to take up seed multiplication and distribution of 4 food crops *viz.*, paddy, wheat, jowar and bajri in order to get increased yields by making improved varieties of pure seed available for sowing. Nucleus seed will be produced on a research station, next stage of multiplication will be on a Government farm, next two stages of multiplication will be with selected zamindars.

Taluka will be taken as a unit. Not more than 20,000 acres will be governed in a taluka. One taluka for each of the four food crops will be taken up simultaneously in the first year and then more area will be taken in the ratio of 2:5:10:10 for five years seeds will have to be purchased at a premium of 8 annas per maund from registered growers and distributed at prevailing market rate.

4. Areas selected for application .. The whole Province.

5. Time expected to be taken for execution .. Immediate.

6. Brief details of staff required. How staff is proposed to be obtained. Nil.

District staff will have to do the work.

7. Rough estimate of cost .. (i) *Capital* Nil.
(ii) *Recurring*—

Year.	Cost of seed.	Storage, etc.	Premium.	Total.
1st	..	6,865	14,500	2,51,709
2nd	..	17,162	32,625	6,24,506
3rd	..	34,325	63,438	12,46,170
4th	..	34,325	63,438	12,46,170
5th	..	34,325	63,438	12,46,170
Total Rs. ..	42,50,284	1,27,002	2,37,439	46,14,725

- | | | |
|-----|--|--|
| 8. | Extent to which the Scheme will be productive. | Not directly productive to Government but will increase the yields of food crops resulting in additional to quantity of food grain. Cost of seed and bags will be recovered. |
| 9 | Extent to which Scheme will cater for returned service personnel. | Nil. |
| 10. | General description of plant, equipment, etc. | Nil. |
| 11. | Labour force required | Nil. |
| 12. | Whether the assistance of the Central Government is required for obtaining material and personnel. | Nil. |
| 13. | Brief indication of further development in succeeding five-year periods. | Nil. |
| 14. | Any other remarks or information | Nil. |

1.	Serial No. of Scheme	..	..
2.	Name of Scheme	..	..	<i>Grow More Food. Manuring of Crops.</i>
3.	Brief description of the Scheme	..	..	An intensive drive with wide-spread and well planned demonstrations and well distributed Depots is necessary. It is proposed that in case of green manuring exemption of assessment be given to encourage cultivation of gowar, mattar where it is not done. Sulphate of Ammonia be distributed at concession rates. Compost making by digging refuse pits in villages be demonstrated. This may be done for 3 years by which time the agriculturists should be expected to use the manure at full cost as by that time they will know the benefits of the same.
4.	Areas selected for application	..	..	Whole Province.
5.	Time expected to be taken for execution	..	..	Immediate.
6.	Brief details of staff required	..	..	Nil.
7.	Rough estimate of cost	..	..	(i) <i>Capital</i> Nil. (ii) <i>Recurring</i> —
			1st year. Rs.	2nd year. Rs.	3rd year. Rs.
	(a) Green Manuring—				
	Exemption of assessment on—				
	15,000 acres in 1st year.		37,500		
	45,000 acres in 2nd year.			1,12,500	
	75,000 acres in 3rd year.				1,87,500

1st year
Rs.

2nd year
Rs.

3rd year
Rs.

(b) Sulphate of Ammonia—

1st year 1,000 tons at half Cost to
be borne by Government. Rs. 125

per ton.

1,67,000

2nd year 2,000 tons at 2/3rd cost,
i. e., Rs. 83-5-4 per ton to be borne
by Government.

3,13,000

3rd year 5,000 tons at 3/4th cost,
i. e., Rs. 62-8-0 per ton to be borne
by Government.

(c) Village Compost Making

16,000

32,000

1,00,000

Total .. 1,78,500 3,11,500 6,00,500

Grand Total .. 10,90,500

Not directly productive to Government but intensive manuring of crops
will produce large additional quantities of agricultural products.

8. Extent to which the Scheme will be productive.

Nil.

9. Extent to which Scheme will cater for returned service personnel.

Nil.

10. General description of plant, equipment, etc.

Nil.

11. Labour force required

Nil.

12. Whether the assistance of the Central Government is required for obtaining material and personnel.

Assistance of Central Government is required to supply sulphate of ammonia.

13. Brief indication of further development in succeeding five year periods.

Nil.

14. Any other remarks or information ..

Nil.

1.	Serial No. of Scheme	..	..	39	
2.	Name of Scheme	..	..	..	<i>Grow More Food.</i> Digging of wells for irrigation.
3.	Brief description of Scheme	..	..	..	It is proposed to give subsidy for digging 200 wells every year at Rs. 1,500 a well, half of which to be borne by Government so as to bring the waste lift areas under cultivation and encourage fruit and vegetable cultivation.
4.	Areas selected for application	..	..	..	Sukkur District, Karachi District.
5.	Time expected to be taken for execution	..	..	..	Immediate.
6.	Brief details of staff required	..	..	..	Nil.
7.	Rough estimate of cost	..	..	..	(i) <i>Capital</i> Nil. (ii) <i>Recurring</i> Rs. 1,50,000 per annum.
8.	Extent to which the Scheme will be productive.	..	..	..	Not directly productive to Government but will result in additional area under cultivation being more assessment to Government and additional quantities of agricultural products.
9.	Extent to which Scheme will cater for re-turned service personnel.	..	..	..	Nil.
10.	General description of plant, equipment, etc.	..	..	..	Nil.
11.	Labour force required	..	..	..	Nil.
12.	Whether the assistance of the Central Government is required for obtaining material and personnel.	..	..	..	Nil.
13.	Brief indication of further development in succeeding five-year periods.	..	..	..	Nil.
14.	Any other remarks or information	..	..	..	Nil.

1.	Serial No. of Scheme	40																										
2.	Name of Scheme		<i>Grow More Food.</i> Wheat drilling demonstration.																									
3.	Brief description of Scheme		In order that the agriculturists may know the actual benefit from drilling of wheat areas it is proposed to do demonstration by employing 200 Kamgars for 2 months and supplying seed drills.																									
4.	Areas selected for application		Wheat tracts in whole Province.																									
5.	Time expected to be taken for execution		Immediate.																									
6.	Brief details of staff required and how it is proposed to be obtained.		200 Kamgars (to be trained for the work.)																									
7.	Rough estimate of cost		<table><tr><td>(i) Capital</td><td>..</td><td>..</td><td>..</td><td>Nil.</td></tr><tr><td>(ii) Recurring—</td><td></td><td></td><td></td><td></td></tr><tr><td>200 Kamgars for 2 months at Rs. 50 per mensem</td><td>400</td><td>drills</td><td>at Rs. 2 each</td><td>20,000</td></tr><tr><td></td><td></td><td></td><td></td><td>800</td></tr><tr><td>Total</td><td>....</td><td>20,800</td><td>per annum.</td><td></td></tr></table>	(i) Capital	Nil.	(ii) Recurring—					200 Kamgars for 2 months at Rs. 50 per mensem	400	drills	at Rs. 2 each	20,000					800	Total	20,800	per annum.	
(i) Capital	Nil.																										
(ii) Recurring—																														
200 Kamgars for 2 months at Rs. 50 per mensem	400	drills	at Rs. 2 each	20,000																										
				800																										
Total	20,800	per annum.																											
8.	Extent to which the scheme will be productive.		Not directly productive to Government but will give additional yield resulting in an increase of food crops.																									
9.	Extent to which Scheme will cater for returned service personnel.		Nil.																									
10.	General description of plant, equipment, etc.		Nil.																									
11.	Labour force required		Nil.																									
12.	Whether the assistance of the Central Government is required for obtaining material and personnel.		Nil.																									
13.	Brief indication of further development in succeeding five year periods.		Nil.																									
14.	Any other remarks or information		Nil.																									

1.	Serial No. of Scheme	..	..	41	
2.	Name of Scheme	..	..		<i>Grow More Food.</i> Development of fruits and vegetables.
3.	Brief description of the Scheme	..	..		In order to increase fruits and vegetables cultivation it is necessary to make available sufficient number of fruit plants and vegetable seeds. It is proposed to start fruit nurseries, in addition to those at Mirpurkhas, Sakrand and Dokri, 6 acres on each station producing 1,200 plants at each station. Vegetable seeds be also produced at Sakrand, Dokri and Mirpurkhas 10 acres at each station.
4.	Areas selected for application	..	..		Whole Province.
5.	Time expected to be taken for execution	..	..		Immediate.
6.	Brief details of staff required, etc.	..	..		Nil.
7.	Rough estimate of cost	..	..		(i) <i>Capital</i> Nil. (ii) <i>Recurring</i> —Contingencies Rs. 37,100 per annum.
8.	Extent to which the Scheme will be productive.				Not directly productive but will result in more fruits and vegetable for which there is great demand.
9.	Extent to which Scheme will cater for returned service personnel.				Nil.
10.	General description of plant, equipment, etc.				Nil.
11.	Labour force required	..	..		Nil.
12.	Whether the assistance of the Central Government is required for obtaining material and personnel.				Nil.
13.	Brief indication of further development in succeeding five year periods.				Nil.
14.	Any other remarks or information	..	..		Nil.

Statement showing the staff required for

Serial No. of scheme.	Description of the scheme.	Gazetted.			Graduate Assistants.			Clerks.			Accountants.	Assistant Accountants.	Typists.	Senior Store-keepers.	Junior (Assistant) Store-keepers.	Non-Graduate Assistants.	Kamgars.	Peons.
		Selection grade.	Class.		Grade.			Head Clerk.	Senior and Accounts Clerks.	Junior Clerks.								
			I	II	I	II	III											
9	Post War Schemes, Increased cultivation of pulse crop in rice areas.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	Increased cultivation of cattle fodders.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	Increase in oil seeds area	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...
12	Kalar reclamation ..	...	(a)1	(b)1	...	...	...	...	...	1	...	...	1	...	...	...	...	5
13	(a) Survey of areas in Kohistan for anti-erosion work.	...	(c)1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	3
	(b) Construction of tanks for storing rain water in Kohistan.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	(c) Construction of tube wells in Kohistan.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	District Experimental farms	...	...	8	54	50	64	42	...	14	98	8	8	...	8	6	96	132
15	Survey of riverain areas	...	(b)1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	4
		...	(a)1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	Manuring of crops experiments as well as development plans.	(d)1	...	2(e)	12	...	...	...	...	1	1	(f)1	...	1	...	...	20	8
17	Cotton seed distribution	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	Seed production green manures, pulse and tobacco.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	Building of seed stores ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	Organisation of local manufacture of Agricultural implements.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	Running of 30 tractors by the Government for zamindari lands on hire.	...	1(g)	...	...	...	...	...	...	1	8	4	...	...	...	4	...	8
22	Opening of 8 tractors serving and repairing stations.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	Training of tractor drivers and Mechanics.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	Establishment of Agricultural College at Hyderabad.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Total ...	1	11	59	62	85	42	...	16	108	13	8	4	8	10	96	20	160

(a) P. W. D.

(b) Agricultural Officers.

(c) Engineer.

(d) Chief Chemists Rs. 800-50-1,200.

(e) Assistant Chemist.

(f) Accountant and Head Clerk.

(g) Assistant Engineer.

execution of postwar plan of Agriculture.

[illegible]

Serial number of scheme.	Description of the Scheme.	Gazetted.			Graduate Assistants.			Clerks.			Accounts.	Assistant Accountants.	Typists.	Senior Store-keeper.	Junior (Assistant) Store-keepers.	Non-Graduate Assistants.	Kamgars.	Peons.
		Selection grade.	Class.		Grade.			Superintendents or Head Clerks.	Senior clerks Accounts clerks.	Junior clerks.								
			I	II	I	II	III											
	Brought forward ...	1	11	59	62	86	42	...	16	108	13	8	4	8	10	96	20	160
25	Experimental Substations	..	...	...	...	...	...	...	...	...	...	...	...	...	...	60	...	...
26	Surveys of desert talukas for construction of tanks.	...	1	...	..	...	...	...	...	...	..	...	1	...	...	...	...	2
27	Conservation of hay in desert Talukas.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	Creation of post of Animals husbandry, professor in Agricultural college.	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	Reorganisation of Agricultural economics section.	...	1	...	...	4	6	1	...	2	...	...	...	...	...	...	...	6
30	Training of Malhis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6
31	Supply of sprayers and insecticides to cultivators.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	Post graduate training of staff	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	Reorganization of publicity section.	...	...	1	..	8	1	...	1	1	...	..	1	..	...	...	8	2
34	Extra Staff thgt will be required for Administrative Organization unyer the Post War Reconstruction.	1	...	5	...	...	...	3	...	...	...	...	...	...	...	...	...	...
	GROW MORE FOOD SCHEMES.																	
35	Additional staff required	...	1	11	13	4	19	87	...	15	34	9	2	4	...	4	6	254
36	Training of Additional staff	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	1
37	Seed multiplication and distribution of food crops.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	Manuring of crops	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
39	Digging of wells for irrigation	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
40	Wheat drilling demonstration	..	..	...	...	...	...	...	...	...	...	...	...	...	...	...	200	...
41	Development of fruits and vegetables.	...	...	...	...	..	...	...	...	...	...	...	...	..	...	...	...	...
	Grand Total	...	2	15	73	66	117	86	4	32	146	28	10	10	8	15	164	223

* English

† Professor of Animal

§ Investigator

‡ Joint Director of Horticulturist.

B.—VETERINARY.

(1) Serial number of Scheme	..	42.	Animal Disease Control and treatment of sick animals.
(2) Name of Scheme—	....	..	More than two-thirds of the workers in Sind are engaged in Agricultural pursuits, either as cultivators or as cattle breeders, while still others are indirectly connected with agriculture in-as-much as they are concerned with the disposal of crops. Three-fourths of exports of Sind are Agricultural and Animal Products, mostly wheat, rice, cotton, hides, goat hairs and wool. Sind is thus essentially an agricultural province and it can, I think, be safely assumed that it will remain so indefinitely, and for many generations yet to come the cattle of the country will be indispensable for ploughing of the soil. The necessity, therefore, for an efficient and up-to-date Veterinary Department will be obvious. In my opinion expenditure incurred on a Nation-Building Department like the Veterinary Department will always be money well spent, for in the long run it must always yield a return which will contribute materially to the wealth and welfare of the people and particularly of that large agricultural section of the community from which the revenues of the province are so largely derived in one way or the other. This is realized in most agricultural and stock keeping provinces. In Sind, however, the value of the work of the department has not in the past been accorded the recognition that has been its due and the department has never received the staff, the funds and the backing commensurate with the vital nature of its function in the internal economy of the province.
(3) Brief description of Scheme	..	..	At present there are only 37 Veterinary Dispensaries and 37 Veterinary Assistant Surgeons to look after the cattle. The number of cattle in

Sind is 23,76,036. which means each Veterinary Assistant Surgeon at present has to look after 64,217 cattle and cover over 1,240 sq. miles. In addition to cattle, there are 31,15,840 sheep, goats, horses, camels, mules, donkeys and poultry which have to be cared for. The Royal Commission on Agriculture recommended one Veterinary Assistant Surgeon for every 25,000 cattle; according to these recommendations, Sind should have at least 95 Veterinary Dispensaries and corresponding controlling staff. A Veterinary Dispensary in each Taluka is considered necessary, *i.e.*, 61 in all should be the minimum strength.

Each year 2,115 cattle are lost through contagious diseases. These are the figures collected by the Veterinary Department and there are about three times more deaths which are not reported and recorded as Veterinary Dispensaries are situated so far distant apart that all the cultivators and live-stock owners are unable to take advantage of the modern methods of disease control. It is proposed to open five dispensaries each year, *viz.*, in the course of five years we should have 61 dispensaries. For the organisation of field work, the province is divided into Upper and Lower Sind Circles, each of these charges should be held by Deputy Director of Class I and then these charges should be sub-divided into two circles each, and each circle should be in charge of Assistant Director, Class II. Present posts of Inspectors should be turned into those of Assistant Directors. Deputy Directors of Class I should have M. R. C. V. S. qualification or its equivalent, and later on if suitable candidates are available in Class II cadre, they could be promoted.

Great necessity is felt that there should be a flying squad incharge of Class II Officer to carry out mass inoculations in case of outbreaks of Rinderpest, Anthrax, Haemorrhagic Septicaemia or any other contagious diseases. Itinerary Veterinary Dispensaries are recommend for each district. We have already

eight and to bring the strength to 24, we require 16 more. So in the course of five years, we want to open three dispensaries each year. These Itinerary dispensaries will move from village to village and remain on the move for about 20 days in a month. In the event of severe outbreaks where mass inoculations are required, these men will be called upon to act as flying squad and carry on preventive inoculations. In addition to the above subordinate staff, I recommend one Veterinary Field Compounder to be attached to each Veterinary dispensary. These men will look after the animals who require periodic drenching against internal parasites and Foot-and-Mouth disease cases. Instead of having two qualified Veterinary Assistant Surgeons in a taluka we will have one qualified Veterinary Assistant Surgeon and one Field Compounder. By this, Government will save a lot of money.

We have 16 Veterinary Field Compounders and we require 45 more to bring the strength to 61.

Whole Province.

Cannot be precisely anticipated at this stage, but in the course of five years strength will be brought up to as recommended. The details of the staff required under the various categories of the services are given in accompanying statement

Rs. 22,000
Rs. 2,13,000 per annum.

Non-productive.

The scheme will materially benefit the returned service personnel inasmuch as on the termination of the War if the Post War Development Schemes will be sanctioned then there will be lot of vacancies in subordinate and gazetted cadres of Sind Civil Veterinary Department and some of these could be offered to demobilized Army Veterinary Personnel with suitable qualifications.

- (4) Areas selected for application, if applicable.
- (5) Time expected to be taken for execution. . .
- (6) Brief details of the staff required and how it is proposed to be obtained.
- (7) Rough estimate of cost at existing rates.—

(i) Capital
(ii) Recurring

- (8) Extent to which the scheme will be productive
- (9) Extent to which the scheme will cater for returned service personnel.

(10) General description of plants, equipment or stores.—

(i) to be imported from abroad ...

Antrypol, Carbon Tetrachloride, Derris Powder, Pine Oil, Pyrethrum Extract and High Speed Diesel oil (fly repellent) and some other drugs will be required to be imported from United Kingdom if not available in India.

(ii) to be obtained in India ...

B. P. drugs manufactured in India and some indigenous drugs required for veterinary practice at the hospitals and dispensaries from the Government Medical Store Depots.

11) Labour force required in the case of the larger schemes.

No remarks to offer.

(12) Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.

Yes, the assistance of the Central Government will be required not only in the matters relating to importation of medical stores both from the United Kingdom and India but also in the recruitment of right type of technical personnel for employment to the posts to be created under the Post War Development Plan.

(13) Brief indication, where applicable, of further development contemplated on the lines of the scheme in succeeding five year periods.

No remarks can be offered unless the results achieved are known after working of the schemes connected with the first five year programme.

(14) Any other remarks or information. ..

The dual control of the District Local Board and the Government interferes immensely with the smooth running of the administration.

The following suggestions are made :—

(1) The power to purchase medicines and other articles which are used in the dispensaries vests in the District Local Boards and they exercise full powers to purchase these articles and pay no heed to Director's orders. Director cannot order even an article of Rs. 10 to be purchased if urgently required, and has to wait for District Local Board's sanction which at times takes months.

(2) All the control of menial establishment, *i.e.*, peons, compounders, bhishtis and sweepers is with District Local Boards and this interferes a lot with the smooth running of a dispensary as these menials do not pay proper heed to Veterinary Assistant Surgeon's orders. Director has no control over this establishment and at times it becomes very embarrassing, however much he may want to shift a man if found unsuitable, but he has no powers to do so.

Accordingly, grant-in-aid from District Local Boards for dispensaries should be taken, but full control of the administration should be transferred to the Director of Veterinary Services, Sind.

With the above sanctioned staff, there should be an ideal building available for accommodating all the officers and their establishment as well as the Veterinary Laboratory.

The cost of the scheme is given as per details in the statement, printed at page 141.

Statement showing the details of expenditure involved in scheme
No. 42 (Items 6 and 14).

(1) WORK CONFINED TO FIELD OPERATIONS.

Organisation of establishment.—Field Work.

Appointment of 4 Assistant Directors of Veterinary Services in Sind, establishment, etc.—

	Recurring	Non-recurring
	Average cost per annum. Rs.	Rs.
<i>Officers.—</i>		
Pay Rs. 350 each in the scale of (200—15—500)	17,000	
<i>Establishment.—</i>		
8 Clerks (two to each officer) 25—5/2—75 at Rs. 50 per mensem ..	4,800	
8 peons (two to each officer) 16—1/5—20 at Rs. 18 per mensem ..	1,800	
<i>Allowances, Honoraria, etc.—</i>		
House rent and other allowances	460	
Travelling allowance for 4 officers at Rs. 1,000	4,000	
<i>Contingencies—</i>		
Non-recurring .. Rs. 4,000		4,000
Recurring .. Rs. 8,000		
	8,000	
Total Rs.	36,060	4,000

(2) SUBORDINATE VETERINARY ESTABLISHMENT

Appointment of additional Subordinate Veterinary Staff.

Allowances, Honoraria, etc.

	Rs.	
27 Veterinary Assistant Surgeons (80—5—175) at Rs. 122 per mensem	39,528	
4 Reserve Veterinary Assistant Surgeons do. at 12½% of the total strength	5,900	
45 Veterinary Field Compounders (30—1—50) at Rs. 45 per mensem ..	24,540	
16 Itinerary Veterinary Assistant Surgeons in the scale of Rs. 80—5—175 at Rs. 122 per mensem	23,500	
16 peons for 16 Itinerating Veterinary Dispensaries in the scale of Rs. 16—1/5—20 at Rs. 18 per mensem	3,500	
<i>Allowances, Honoraria, etc.—</i>		
House rent and Other Allowances—		
Travelling allowance	42,000	
<i>Contingencies.—</i>		
Non-recurring Rs. 14,000 .. (Rs. 8,000 for 16 Itinerary Veterinary Dispensaries at Rs. 500 each and Rs. 6,000 for 45 Veterinary Field Compounders)		14,000
Recurring. .. Rs. 8,000	8,000	
Add for rounding	32	
Total Rs.	1,47,000	14,000

Appointment of two Deputy Directors of Veterinary Services, Sind, Class I (scale Rs. 300—25—900) at Rs. 573 .. 13,800

Establishment.—

2 Head Clerks (90—5/2—115) at Rs. 106	2,600
2 Accounts Clerks (65—5/2—90) at Rs. 82	2,000
2 Camp Clerks (25—5/2—75) at Rs. 50	1,200
2 Typist Clerks (25—5/2—75) at Rs. 50	1,200
4 Peons (16—1/5—20) at Rs. 18	900

Allowances, Honoraria, etc.—

House rent and other allowances	1,400
Travelling Allowance	3,000

Contingencies—

Non-recurring	Rs. 4,000	
Recurring	Rs. 4,000	
	4,000	4,000
Total Rs.	30,100	4,000

Grand Total

(1) Serial number of Scheme	..	43
(2) Name of Scheme	..	Veterinary Research.
(3) Brief description of Scheme	..	<p>Research must necessarily play a very important part in the activities of the Veterinary Department. Upon its successful prosecution, depends the solution of many problems which confront us to-day, not only in the realms of disease but also in the matters of maintaining animals in health and in the various aspects of animal nutrition and animal genetics. With regard to disease, considerable headway has already been made towards the perfection of prophylactic vaccines against Rinderpest dread of the country and contagious pleuropneumonia in goats, but much work still remains to be done on Anthrax, Contagious agalactia, Sheep pneumonia, Sheep and Goat Mammitis and innumerable other diseases. There should be at headquarters, a Deputy Director in charge of Research in Class I. Candidate should have M.R.C.V.S. qualification. The present Veterinary Investigation Officer could be designated as Deputy Director (Research) and whose duties would be to investigate the prevalence of diseases, supply material or information to the Federal Research Institute and introduce latest methods of disease control. Whenever a new disease is reported, he would investigate it and instruct the field staff how to deal with it. He would also carry out investigations on his own account and should be provided with a well equipped laboratory for the purpose. He would be a specialist advising the general practitioners in the districts and supervise the working of Goat Tissue Virus Producing Station and other research schemes. Under Deputy Director (Research) there will be a Class II Officer in charge, Laboratory already existing and Assistant Investigation Officer (Poultry) Scheme whose appointment is already before the Government.</p>

Additional staff required will be one Veterinary Assistant Surgeon, one Laboratory Assistant and one Animal attendant to look after the experimental animals.

Whole Province.

(4) Areas selected for application, if applicable
(5) Time expected to be taken for execution.

Cannot be anticipated precisely at this stage but in the course of five years strength will be brought upto as recommended.

(6) Brief details of the staff required and how it is proposed to be obtained.

The details of the staff required under the various categories of the services are given in the accompanying statement.

(7) Rough estimate of cost at existing rates—

(i) Capital Rs. 1,50,000.

(ii) Recurring Rs. 75,438 per annum.

(8) Extent to which the scheme will be productive.

Non-productive.

(9) Extent to which the scheme will cater for returned service personnel.

The scheme will materially benefit the returned service personnel in as much as on the termination of the War if the Post War Development Schemes will be sanctioned then there will be lot of vacancies in subordinate and gazetted cadres of Sind Civil Veterinary Department and some of these could be offered to demobilized Army Veterinary Personnel with suitable qualifications.

(10) General description of plants, equipment or stores.—

(i) to be imported from abroad

} Apparatus and articles can generally be had in India. If some articles are not available, e.g., Virus filtering candles and pumps, etc., these will have to be imported from abroad. Majority of the equipment will be purchased from the firms in India.

(ii) to be obtained in India

- (11) Labour force required in the case of the larger schemes. No remarks to offer.
- (12) Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel. Yes, the assistance of the Central Government will be required in matters relating to importation of laboratory equipment from the United Kingdom.
- (13) Brief indication, where applicable, of further development contemplated on the lines of the scheme in succeeding five year periods. Research is the backbone of all scientific pursuits and its need is always present without which progress is checked.
- (14) Any other remarks or information. No remarks.

*Statement showing the details of the staff and expenditure involved
in Scheme No. 43 (item No. 6).*

VETERINARY LABORATORY.

*Re-organisation of Veterinary Laboratory at Karachi—Appointment
of additional staff.*

Veterinary Research and Education.

Entertainment of additional staff on research side of work.

Veterinary Investigation Officer be designated as Deputy Director of Veterinary Services (Research) Class I in the scale of Rs. 300—25—900 at Rs. 673 per mensem.

The Present Veterinary Investigation Officer in Class II Service in the scale of Rs. 400—25—600 at Rs. 527.

	Recurring. Rs.
Difference Rs. 146 or say Rs. 150×12	1,800
Additional Veterinary Assistant Surgeon (Rs. 80—5—175) at 122 ..	1,464
Additional Laboratory Assistant (Rs. 30—1—50) at 45 ..	540
Additional Animal attendant (Rs. 25—1—35) at Rs. 32. ..	384
<i>Allowances, Honoraria, etc.—</i>	
House rent and other allowances	250
Travelling allowance	1,000
Total Rs. ..	<u>5,438</u>

Administration.—

Revision of scale of pay of Director of Veterinary Services, Rs.
Sind, i. e., Rs. 1,200—50—1,500 against Rs. 600—50/2—900, 7,200
Rs. $1380 - 780 = 600 \times 12 = 7,200$.

Office Establishment for Director of Veterinary Services.—

	Rs.
Office Superintendent (Rs. 180—10—260) at Rs. 233 instead of	
Head Clerk (Rs. 125—5—180) at Rs. 163 70×12 ..	840
4 Senior clerks (Rs. 80—5/2—115) at Rs. 101 per mesem ..	5,000
One Steno Typist (Rs. 90—5/2—115) at Rs. 106 per mensem ..	1,300
4 additional Junior clerks at Rs. 50	2,400
(Rs. 25—5/2—75).	
One Record-keeper (Rs. 80—5/2—95) at Rs. 101 per mensem ..	1,200
One Daftari (Rs. 30—1—50) at Rs. 45 per mensem ..	540

Allowances, Honoraria, etc.—

House rent and other allowances	1,200
For rounding ..	320
	<u>20,000</u>

	<i>Recurring</i>	<i>Non-recurring.</i>
	Rs.	Rs.
		1,50,000

Office Building—

Construction of office building for the
Veterinary Directorate.

The following offices will be accommodated—

- (1) The Director of Veterinary Services,
Sind with establishment.
- (2) Deputy Director of Veterinary
Services, Sind, with establishment.
- (3) Deputy Director of Veterinary
Services (Research) with establish-
ment.
- (4) Assistant Veterinary Investigation
Officer, Poultry.
- (5) Officer in charge, Veterinary
Laboratory.
- (6) The Veterinary Inspector, C.V.D.
Lower Sind Circle, with establish-
ment.

RECURRING EXPENDITURE ON EQUIPMENT.

Biological Products.—

	Rs.	
Sera and Vaccines	20,000	
Laboratory Chemicals and apparatus..	20,000	
Control of Sera	10,000	50,000
Total ..		75,438
		per annum.

1,50,000

ADMINISTRATION.

With all the post war development schemes at hand, administration deserves special attention and should find suitable place in the plans outlined.

At present, the hands of the Director of Veterinary Services are over-full with the routine work of the department. There should be an officer of Class I Service placed in charge of looking after such routine work at the headquarters and more so at the time when the Director is away from the headquarters on tour and thus relieve the Director to devote more of his valuable time to other important work of the department deserving his special attention. There is, therefore, ample justification for the entertainment of a Deputy Director for the department with headquarters at Karachi who should be well qualified and necessarily possessing both administrative and technical experience and be a M. R. C. V. S., and selected through the Public Service Commission.

2. The present office establishment is far too poor and with the development of the department under the post war schemes. There should be an adequate staff to deal with the colossal amount of office work. It would entail to maintain efficiency of the working and administration of the department.

3. The need for a suitable office building for accommodating a number of officers at the headquarters is a problem to engage special attention of Government. On termination of War, the present building occupied by my office is required to be vacated. The existing accommodation is not at all sufficient and is too much congested even with the existing staff. Like, N.-W. F. Province where there has been constructed a suitable building for Veterinary Directorate, at Peshawar, a suitable building for Veterinary Directorate will be required to be constructed at Karachi on the similar plans and specifications already obtained.

(1) Serial number of scheme	..	44.
(2) Name of Scheme	..	Education and Training.
(3) Brief description of Scheme	..	There are at present only five Veterinary Colleges in India, <i>viz.</i> : those at Madras, Bombay, Calcutta, Patna and Lahore. From Sind Province scholars are usually sent to Bombay Veterinary College for training till recently when one scholar has been sent to the Punjab Veterinary College, and the Punjab Government have kindly agreed to take one student each year. According to recommendation made in Schemes Nos. 42 and 43, we require a minimum of ten qualified hands each year. This means 11 to 12 students should be sent each year, taking into consideration one or two candidates unable to qualify in the prescribed period. Minimum qualifications for admission and length of course at Punjab and Bombay Veterinary Colleges are Matriculation and Inter Science (Medical group), 4½ years and 3 years, respectively. A Scholar at the Punjab and Bombay Veterinary Colleges costs Government each year Rs. 1,600 and Rs. 680 respectively. If we send five scholars to the Punjab and six scholars to Bombay, the annual cost will be Rs. 12,080. To have a Veterinary College in Sind would be a nice thing, we will then not have to depend on the charity of other provinces. The expenditure of three years at Bihar Veterinary College is given below :—

1930-31	..	..	Rs. 78,661.
1931-32	..	..	Rs. 88,015.
1932-33	..	..	Rs. 82,123.

Building of Patna Veterinary College cost Rs. 5,27,510. Considering the above expenditure one is not justified to recommend opening a Veterinary College for Sind, particularly when not more than ten to twelve trained hands will be needed.

We should approach the Punjab Government and request them to allot five seats each year for Sind Scholars. Sind Government could offer an annual payment for training of five scholars at Punjab Veterinary College. Central Government is thinking of opening a Central Veterinary College and Sind can take advantage of it. Government of India in their recommendations consider that an up-to-date Veterinary College run by a province will cost about Rs. 2 lakhs a year. Veterinary Field Compounders will be trained by the Veterinary Assistant Surgeons and then examined by the gazetted officers as regards their efficiency and grasp of Veterinary Science.

I recommend two Veterinary Assistant Surgeons each year should be sent to Imperial Veterinary Research Institute for post graduate courses in Veterinary and Poultry. Period of courses are for 3 and 6 months respectively, and fee charged each month is Rs. 26 for each candidate. For the posts of Director of Veterinary Services, Sind, two Deputy Directors of Veterinary Services and one Deputy Director of Veterinary Services, Research, candidates will have to be sent to United Kingdom for M. R. C. V. S. training, if in India no Veterinary College is started upto that standard. Some of these candidates will have to be sent abroad and asked to take special training in genetics and animal nutrition. Duration of course for M.R.C.V.S. is five years and minimum qualification for admission is F. S. C. (Medical group). One candidate every eight or ten years will be required. Cost per year each candidate runs between £350 to £400. Cost is not shown in five year plan as no candidate can be trained in that short time.

Whole Province.

- (4) Areas selected for application, if applicable.
- (5) Time expected to be taken for execution :- Five years.
- (6) Brief details of the staff required and how it is proposed to be obtained. Nil.

(7) Rough estimate of cost at existing rates—
 (i) Capital Nil.
 (ii) Recurring Rs. 16,000 per annum.

(8) Extent to which the scheme will be productive. Non-productive.

(9) Extent to which the scheme will cater for returned service personnel.
 (10) General description of plants, equipment or stores— Nil.
 (1) to be imported from abroad ..
 (2) to be obtained in India ..

(11) Labour force required in the case of larger schemes.

(12) Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.

(13) Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.

(14) Any other remarks or information ..

Yes, the assistance of the Central Government will be required in the matters pertaining to admission of Sindhi scholars to the Central Veterinary College.

No remarks can be offered unless the results achieved are known after working of the schemes connected with the first five year programme.

No remarks.

*Key Statement of the individual schemes relating to IX—Agriculture,
Veterinary, etc.*

Serial No. of Scheme.	Description of the scheme.	Approximate cost of 5 years plan in thousands.		Category of Scheme.	Special remarks, if any.
		Capital.	Recurring.		
1	2	3	4	5	6
	A—AGRICULTURE.	Rs.	Rs.		
	(i) <i>Post War Schemes.</i>				
9	Increased cultivation of pulse crop in rice area.	Nil	59,25	Particular Area ..	
10	Increased cultivation of cattle fodders.	Nil	20,50	} All Province ..	
11	Increase in oil seeds area ..	Nil	4,16		
12	Kalar reclamation	Nil	80		
13	(a) Survey of areas in Kohistan for anti-erosion work. (b) Construction of tanks for storing rain water in Kohistan (c) Construction of tube wells in Kohistan.	Nil	58	Particular Area ..	
14	District Experimental farms ..	1,50,00	1,80,00	All Province.	
15	Survey of riverain areas ..	Nil	50	Particular Area ..	
16	Manuring of crops experiments as well as development plans.	75	4,50	Special Priority ..	
17	Cotton seed distribution ..	15	1,60,00	All Province ..	
18	Seed production, green manures, pulse and tobacco.	Nil	24	Particular Area ..	
19	Building of seed stores ..	12,00	50	All Province ..	
20	Organisation of local manufacture of Agriculture implements	1	30	Special Priority ..	
21	Running of 30 tractors by the Government for zamindari lands on hire.	17,00	17,75	} All Province ..	
22	Opening of a tractors servicing and repairing stations.	4,00	6,20		
23	Training of tractor drivers and Mechanics.	Nil	1,15	} Special Priority ..	
24	Transfer of Agricultural College to Hyderabad.	9,00	17,40		
25	Experimental Sub-stations ..	29,00	27,50	All Province ..	
26	Survey of desert talukas for constructions of tanks.	Nil	75	} Particular Area ..	
27	Conservation of hay in Desert Talukas.	1,30	2,50		
28	Creation of a post of Animals Husbandry Professor in Agricultural College.	Nil	35		

Serial No. of Scheme.	Description of the Scheme.	Approximate cost of 5 years plan in thousands.		Category of Scheme.	Special remarks, if any.
		Capital.	Recurring.		
1	2	3	4	5	6
29	Reorganisation of Agricultural Economies Section.	1	1,20	All Province ..	
30	Training of Malhis ..	81	1,70	Special Priority ..	
31	Supply of sprayers and insecticide to cultivators.	75	60	All Province ..	
32	Post graduate training of staff..	Nil	4,70	} Special Priority..	
33	Reorganisation of Publicity Section.	1,60	4,70		
34	Extra staff that will be required for Administrative organization under the Post War Reconstruction.	Nil	2,50		
		2,26,38	5,20,33		
		7,46,71			
	(ii) Grow More Food Schemes.				
35	Additional staff required ..	1,91	30,79	} Special Priority..	
36	Training of Additional staff ..	4,22	7,17		
37	Seed multiplication and distribution of food crop.	Nil	46,15		
38	Manuring of crops ..	Nil	10,91		
39	Digging of wells for irrigation .	Nil	7,50		
40	Wheat drilling demonstration..	Nil	1,04		
41	Development of fruits and vegetables.	Nil	1,86		
		6,13	1,05,42		
		1,11,55			
	Grand Total for Agriculture..	2,32,51	6,25,75		
		8,58,26			
	B—VETERINARY.				
42	Animal Disease Control ..	22	10,65	All Province ..	
43	Veterinary Research ..	1,50	3,77	} Special priority ..	
44	Education and Training ..	Nil	80		
		1,72	15,22		
		16,94			
	Grand Total for Agriculture and Veterinary.	2,34,23	6,40,97		
		8,75,20			

NARRATIVE STATEMENT OF OBJECTIVES OF THE POST-WAR SCHEMES UNDER IX—"AGRICULTURE".

PART I.—GENERAL.

OBJECTS AND AIMS.

1. In our approach to the problem of agricultural development we are primarily concerned with devising ways and means of developing the great potential wealth of the Province through increased productivity. But planning has a deeper significance than this purely materialistic design. Agriculture is a way of life to the majority of the people of the Province. The conditions under which they live are largely, though by no means entirely, determined by their incomes. The man with whom we are primarily concerned is the man-behind-the-plough. He is the under-privileged; he is the producer. It is he who contributes most to the wealth of the Province, and it is his family's welfare that should receive our first attention.

2. The standards of living and the levels of nutrition of these people and their families leave much to be desired. Thanks to the productivity of the irrigated lands which they cultivate, the food they eat may be more than a belly-full once a day but it is badly balanced in its nutritive qualities. The clothes they wear and the houses in which they live (often not worthy of the name of a house) largely depend on their purchasing power, and on the ready availability of the consumers' goods which they need. The productive capacity of the agricultural labour varies with the malnutrition and diseases amongst themselves and their domestic animals; and it varies in particular with the debilitating effects of malaria which is rampant over the greater part of the Province for considerable periods each year. Little is done to relieve them from this form of distress arising out of causes beyond their control.

3. The Sindhi cultivator has the reputation amongst the unknowing of being lazy. This is an unkind and an unfair aspersion. The social customs amongst the rural population have a strong bearing on their standards of living and are dictated by family traditions and religious observances which altogether make a heavy drain on their financial resources. Their idea of luxury is antiquated. Their agricultural practices are primitive. With rare exceptions they have no security of tenure in the lands they cultivate. Their social amenities are indeed meagre. Their ignorance is profound. Much can be done on their behalf by the State, and much can be done by themselves to improve their lot provided they had greater knowledge. Education in its broadest sense, namely the acquisition of desirable knowledge, should therefore be in the forefront of planning. The capacity to read and write will be an aid to education, but education is not necessarily conditional on literacy. So while we are waiting for the stigma of the illiteracy of our people to be removed, we can proceed with giving them enlightenment in their arduous task of providing us with our daily bread.

4. The foregoing applies equally to the rest of India as it does to Sind. But unlike many other regions of India, Sind is fortunate in being a Province which produces a surplus of food-grains each year,—thanks to the harnessing of part of the waters of the Indus for irrigation. In increasing her agricultural productivity to the optimum potential, Sind will not only be helping her own people but she will be meeting her obligation to help to feed India's population in less-favoured rural regions and in urban areas. This objective implies an "economy of abundance".

5. Before many of the schemes for increasing the agricultural productivity of the Province can be undertaken, the organisation of the Department of Agriculture will need to be considerably enlarged, more attractive conditions for new recruits will have to be offered, better prospects of service given to all grades and classes, departmental farms and research stations expanded, seed multiplication and distribution schemes organised on a comprehensive scale, and training facilities at the Agricultural College considerably enlarged. The bottleneck in planning will be the training of men of the desired calibre in adequate numbers to execute the plans. To try to make concrete without cement will be a hopeless task.

(2) RESOURCES.

6. **Topography.**—The area of the Province is about 32 million acres. Of which, about $1\frac{1}{2}$ million acres form the alluvial plain, and the remainder is either desert or semi-desert. On the west the mountains and hills of Kohistan and the Khirtar range which rise to a maximum height of 7,000 feet are almost bare of tree vegetation. Except during occasional monsoon floods, the river beds amongst these hills are dry for the greater part of the year. The valleys in the hilly region abound with bunded fields to conserve some of the sparse rainfall for agriculture.

7. The eastern portion of the Province, known as the Thar desert having an area of about 6 million acres is largely composed of a succession of more or less parallel sand hills, running south-east and north-west, and rising to a maximum height of about 200 feet. These are mostly static and carry sparse tree and shrub vegetation. Grasses grow abundantly on the flat areas and also in the troughs between the sand hills whenever the rains are ample. This is the main locust breeding area of India.

8. The central portion of the Province constitutes a part of the great alluvial plain of the Indus delta which reaches from the sea to the foot-hills of the Himalayas in the Punjab. Herein lies the great potential agricultural wealth of Sind—the makings of a second Egypt.

9. The Indus flows southwards more or less mid-way through this belt. The size of the river may be gauged from the fact that its width exceeds a mile at the site of the Lloyd Barrage at Sukkur. During the flood season the river may overflow its banks and the surrounding country has to be protected with a continuous earth embankment on each of its banks. The gradient in the land from the entry of the Indus into Sind to the sea over a distance of 600 river miles is only 250 feet which is less than 6 inches per mile. The volume of water in the Indus fluctuates with the season. The flood season coincides with the melting of the Himalayan snows. The magnitude of the floods each year is determined primarily by the extent of snowfall during the previous winter in the Himalayas. Highest floods are attained when heavy monsoon rains coincide with the peak snow-flood season during July and August. The winter discharge of the Indus at the Lloyd Barrage averages about 22,500 cusecs. This is all used for irrigation, but the river continues to flow from the Barrage to the sea in winter in virtue of its channel acting as a drain receiving seepage water from the neighbouring irrigated lands. The summer discharge at the height of the flood season may be as high as 725,000 cusecs of which only about 122,000 cusecs are used for irrigation.

23. This soil classification has revealed the presence of salt over wider areas than hitherto suspected. What is of importance at this stage in the Lloyd Barrage area is the need to plan for the periodic re-classification of selected large blocks of land, with the view to watch the rate of deterioration and at the same time to plan preventive and remedial measures to counter the salt problem. These are matters which in the first instance will chiefly concern the Irrigation Engineers and Soil Chemists, but the farmer who uses the water will have his part to play in solving the salt problem.

24. **Water.**—Water is by far the most important single factor determining agricultural productivity—be it rain water, river water or sub-soil water. Of these 3 sources of water-supply in Sind, the river water is predominant. As the Nile is to Egypt so is the Indus to Sind. With its river water unharnessed, Sind would be little better than a desert waste. To what extent have the waters of the Indus been harnessed? Of the water which arrives at the Lloyd Barrage at peak floods, only about 17 per cent is used for irrigation, the balance goes to waste in the sea.

25. The river discharge varies with the season. It is highest in the summer months when the Himalayan snows melt and lowest in the winter months. The river level usually begins to rise towards the end of April reaches its peak during July and August, and subsides gradually thereafter until the last of the snow-waters have passed. The difference between river levels in summer and winter may exceed 20 feet. The fluctuating river discharges and the rise in river levels have a bearing on the crops grown, on the methods of agriculture, and on the irrigation practices in vogue, dependent on whether the water supply is perennial or non-perennial and whether the non-perennial water is assured.

26. In olden times the only form of irrigation was by flood inundation *i.e.*, as the river level rose each summer, it was tapped by canals without headworks. These canals began to function only when the river level reached that of the bed of the canal, and they continued to function only as long as the river level did not further subside. The flood period was customarily sufficiently long to enable short duration crops such as rice and millets to be matured, but there was no assurance of supply. This system of inundation irrigation is still practised in the Karachi district and in the Upper Sind canals on an area of about $3\frac{1}{2}$ million acres. It is these tracts and adjacent lands that will receive an assured supply of water on completion of the 2 new Barrage projects comprising total commanded area of about 4 million acres.

27. After construction of the Lloyd Barrage, the river level at Sukku could be regulated and maintained at a level which enabled the lands commanded by the Barrage to receive an assured controlled supply of water. The canals which are controlled by the Barrage are in 2 categories, *viz.* perennial and non-perennial. In the case of perennial canals water is available throughout the year and is used for growing such dry crops as cotton, wheat, oil-seeds, millets, etc., whereas the non-perennial Barrage canals provide a regulated supply of water only during the flood season, and this is used for growing rice followed by unirrigated oil-seeds and pulses in the winter months during which the canals are closed.

28. Agricultural labour.—The population of Sind at the last census was 45,00,000. Of which 36,00,000 were rural and 9,00,000 urban. The agricultural classes are mostly landless labourers who are engaged in farming as share-croppers (*haris*). As long as good relations prevail between landlords and tenants, which is customary, the tenants are not ejected. A more frequent occurrence is for tenants to change masters in order to cultivate lands which are more fertile or which have a more assured water supply.

29. The shortage of agricultural labour in Sind is acute. It is one of the major factors limiting productivity. The activities of the Sind cultivator are dictated by the conditions under which he lives. He has no incentive to improve the land he cultivates nor to maintain it in good heart. He pays no rent, water rates, taxes, cesses or other Government dues. He manages to plough and sow about 8 acres of cotton and about 8 acres of wheat each year in addition to a few acres of cattle fodders and subsidiary crops. As an alternative to these, he may grow 12 acres or more of rice on rice canals. It is physically impossible for one ploughman with one pair of bullocks to attain maximum productivity on such extensive areas. With the expansion of irrigation contemplated under the 2 new irrigation projects, the agricultural labour problem will become increasingly acute.

30. The rural population resident in the irrigated areas is inadequate to meet the demands of agriculture, and especially so at times of crop harvests. The seasonal immigrant labour from the adjoining unirrigated areas serves to solve the labour problem in part. This labour arrives immediately after it has harvested its monsoon crops in the late autumn each year, and it comes in time to help in cotton picking and rice harvest. Most of it remains until the wheat harvest from March to May when it returns to its desert home to prepare lands for the next monsoon season. The grain and cash earned by these people in the irrigated areas goes to supplement their meagre livelihood dependent on precarious rains and subject to occasional severe famines in the desert areas. They provide their own temporary shelter and carry their household goods on donkeys and camels.

31. On the perennial canals agricultural labour is fully occupied throughout the year because of the quick succession of seasonal crops each of which demands preparatory tillage, periodic irrigation, inter-cultivation and harvest operations. On non-perennial canals, the position is different in that rice, which is considered to be a lazy man's crop, demands much less attention, and the winter crops which may follow it are not irrigated. The effective labour on non-perennial canals is used only in small part and these are the tracts in the irrigated areas where cottage home industries should be encouraged. Cattle breeding is an important source of income to agricultural labour in rice tracts and no charge is made to them by the landowner for the upkeep of the cattle which subsist largely on the rough grazing.

32. The solution to the labour problem in Sind lies partly in the immigration of labour from congested over-populated regions in other parts of India and partly in the mechanisation of agriculture.

33. Mechanisation.—There is considerable scope for the use of labour-saving machinery on the irrigated lands. But the time is not ripe for general farm mechanisation designed to replace the share-cropping system. What is

immediately needed is help in preparing the land at peak-season demands on labour. This can be done with tractor-drawn disc harrows which are efficient and economic in operation and easy to operate. Deep ploughing may also be preferred when burying green manures in the soil but this can be done reasonably efficiently with disc harrows. One set should be used for demonstration in each taluka and the requisite number of sets placed at each Government farm. Provision should be made for training drivers, for ample spare parts and for workshop repairs. Facilities should be provided for importing this type of machinery in large numbers to meet the public demand. Heavy disc ploughs in the ratio of about 10 per cent of the total imports of disc harrows would probably suffice to meet the present public demand. Government help would be needed in providing the desired services ancillary to this form of mechanised farming.

(3) LAND TENURE.

34. Most of the lands in Sind are comprised of large estates. Lands owned by peasant proprietors constitute a small minority. Most of the farming is done by share-croppers (*haris*) who are tenants-at-will. They supply their own labour and that of their plough bullocks in return for half the produce of the crops grown. This is the *batai* system. The cost of seed for sowing is met by the *hari*. Costs of harvesting, threshing and winnowing are shared equally. *Haris* demand substantial cash advances each year before they engage in cultivation. These are recovered from their share of the crops. Some unscrupulous landowners and leaseholders take advantage of the illiteracy of their *haris* to withhold from them part of their legitimate dues and to keep them in perpetual debt. Farm accounts are often maintained in a manner and in a script both of which are unintelligible to anyone except the writer. It should be made compulsory to maintain *haris'* accounts in standardised form and in an intelligible script.

35. Tenancy rights.—Consideration has been given to the desirability of granting tenancy rights to *haris*. Under existing conditions the disadvantages of granting tenancy rights outweigh the advantages. The ultimate solution, which may not be in our time, may well prove to be the nationalisation of the land and its allotment to peasant proprietors. This is a world trend which may in time prove to be irresistible. It does not rule out one or more forms of co-operative farming best suited to local conditions.

36. Co-operative farming.—The opportunity for large scale co-operative farming based on the model of the half million acres irrigated from the Makwar Dam in the Sudan occurred in Sind at the inauguration of the Lloyd Barrage. That opportunity was lost. It will recur with the two new irrigation projects designed to irrigate about 4 million acres in Lower and Upper Sind. The Sudan GEZIRA scheme is one in which the State, the share-cropper (*hari*) and a managing agency undertake to cultivate large blocks of land on a produce sharing basis.

37. The agents engaged to take charge of the agricultural work in such a co-operative scheme would find the operating capital and in consequence this will not find a place in the post-war schemes to be financed by Govern-

ment. Such a scheme would be planned to cover all aspects of farming, marketing, lay-out of towns and villages, processing of crops grown, village welfare, health, education, communications, etc. It would serve as a model to the rest of the Province. All heavy farm work would be done by machinery and light work by the tenants. Crops would be sold in the best markets by the agency and the net profits shared between the 3 parties to the arrangement on a predetermined equitable basis. There will be no need for revenue or irrigation subordinates in the area operated by such a scheme. Particulars of this scheme will be worked out if the proposal is accepted in principle.

38. Land sales.—The policy of Government in selling lands in large blocks may need revision. Only a relatively small portion of Government owned lands commanded by the Lloyd Barrage have been sold to small holders who cultivate their own lands. In consequence one of the defects in the land tenure system of the Province is being perpetuated and aggravated. It is a matter for consideration whether Government should now take the initiative in encouraging peasant proprietorships of lands by restricting these land sales to economic units which can be cultivated by a *hari* and his family.

39. Scope of Activity.—The agricultural plans provide in the initial stage for one cinema outfit for each of the 8 districts. Its operation would be confined to an area whose size would be about that of one taluka in each district. The area selected for operation need not necessarily be strictly confined to the boundaries of a taluka; it will be dictated by the location of about 15 large villages accessible to motor traffic in which the taluka headquarters would be included. The only break which should be prearranged in the itinerary would be to enable the outfit to attend cattle shows and fairs in the district. The District Local Boards concerned would be expected to contribute towards part of the cost.

40. These proposals will cover "Concentrated areas" in 8 talukas out of a total of 61 talukas. The work should be progressively extended with the purchase of additional mobile cinema outfits as experience is gained on the utility of the service rendered.

41. Rabi Intensity.—The low rabi intensity of cultivation reached on the Lloyd Barrage perennial canals results from a combination of adverse factors. The major factors are firstly, the short sowing season for the wheat crop, and secondly, the low yields obtained from the subsidiary crops of oil-seeds and pulses which may be sown prior to and after the wheat sowing season. These factors may be separately considered.

42. Lift Irrigation.—*Riverain.*—There are extensive areas of rich lands free from salt between the embankments on both banks of the Indus throughout the greater part of its course in Sind. These lands are not generally subject to canal irrigation. It is here that most of the Government forests are located. The private lands are only partly developed and they customarily grow unirrigated crops of wheat, gram or vetches. These lands can in large part be developed by lift irrigation from the Indus. Where the banks of the river are stable, stationary pumps can be erected; where the banks are

unstable and the units of cultivation sufficiently large then pumps installed on stationary barges in the river would be an economic proposition. The first need is a survey of all the areas concerned to determine which can be developed by lift irrigation.

43. Tube Wells.—(a) Irrigation.—There appears to be some scope for tube-well irrigation in the valleys lying in the submontane tract of the Kohistan hills. Test bores should be made and experimental tube-wells operated in those areas where the indications are favourable. If the water table is within 30' of the surface and water-bearing gravel or coarse sand strata to a thickness of about 20' is encountered in the first 200 feet then the well should be tested for its discharge. The costs can be greatly reduced by using double stove-pipes perforated *in situ* opposite the water-bearing strata and operated by a deep-well turbine pump worked by a portable oil-engine. The whole of this outfit can be dismantled if the discharge of the water is insufficient to meet costs of operation.

44. The opportunities for developing tube-well irrigation and also for operating pumps installed in open (cavity) wells in the area within the zone to be supplied with electricity from the Mastikhan fall on the Rohri Canal should be investigated.

45. (b) Drainage.—Where the sub-soil water table on irrigated lands has risen to within a few feet of the surface resulting in accumulation of salt in the soil, such lands can be drained either by open drains which are efficient only as long as the whole drainage system of the tract functions efficiently, or by local reclamation through the medium of tube-wells. The effective radius within which a tube-well will depress the water table in its vicinity depends on the volume of water pumped and on the porosity of the sub-soil in the neighbourhood. An 8" tube-well having 2 cusec capacity can customarily be expected to maintain the sub-soil water below the 10 feet level within a radius of about half a mile under conditions obtaining in Sind. One such installation is urgently required at the Dokri Farm. A complete record of all relevant data concerned with this tube well should be maintained and the efficacy of the well in depressing the water table closely watched. The proposed Reclamation Officer should take charge of the work.

46. Open Cavity Wells.—Large tracts in Upper Sind which either do not receive any irrigation water or only a precarious supply can be developed by the construction of open wells worked by bullock power. In the interests of the 'Grow More Food Campaign' encouragement should be given to private enterprise to dig open wells. The Central Government has agreed to bear half the amount of any subsidies given to landowners for constructing such wells. A small start is expected to be made shortly with subsidised wells. Publicity is needed to advertise the assistance which Government is prepared to afford in this connection.

PART II.—PLANT HUSBANDARY.

————: o :————
 (1) PLANT BREEDING.

————: o :————

47. The Plant Breeder produces improved types of crops either by the selection of superior single plants or by hybridisation. Having done this, he must have proper facilities for testing his seed under field conditions in all the tracts where that crop is grown. The area he requires for the proper testing of his seed at any site need not be large. This results from the application of the theory of statistics to field experiments whereby the relative intrinsic merits of 2 or more varieties of the same crop can be calculated with mathematical accuracy provided the experiment is properly laid out and attended to with care. The facilities for crop testing have not in the past existed to the desired degree, and in consequence, some improved varieties have failed to reach the commercial scale whereas other varieties are grown where they should not be. This must be rectified.

48. The solution of this important problem lies in providing adequate facilities to the plant breeders to test out their strains at a sufficient number of sites in each zone which has a distinctive soil-climate complex. The agricultural plans provide for a minimum of one testing station of about 50 acres in each of the 61 talukas of the Province.

49. **Rice Breeding.**—Good progress has been made in breeding improved varieties of rice suited to conditions in Upper Sind. This work has been neglected in Lower Sind and on the rice canals in Thar Parkar district. Facilities should shortly be available at the recently opened Shorki Rice farm in the Karachi district for rice breeding work. Separate arrangements will be necessary for breeding work on deep-water varieties and salt resistant varieties of rice which are features peculiar to extensive areas in these parts. This work should be delegated to a Class I Botanist stationed at Dokri with a Class II Plant Breeder at each district rice farm.

(2) EXTENSION WORK.

50. **Seed Multiplication.**—The systematic, well-planned and business-like multiplication and distribution of improved seeds on the largest possible scale should be the major activity of the district staff of the Department. Starting with a nucleus plot of any new improved type, the first 3 stages of seed multiplication of any variety can be undertaken with the existing facilities at the research stations and farms. But for the 4th stage, known as A-grade seed growers, greatly improved facilities for multiplying the seed under departmental management are necessary. The 4th stage should be under the direct management and control of the Department.

51. The proposed district farms will afford the greatly needed improved facilities for multiplying improved types of these seeds at the critical fourth stage. Great care will have to be exercised in selecting A and B grade growers who can be relied on to maintain the purity of the types. A substantial premium should be paid for such seed bought by the Department and the premium recovered from the buyer. Costs of rail transport if any should be met by Government. The multiplication scheme should be so organised in each district as to necessitate the minimum expense on rail transport.

(3) GOVERNMENT FARMS.

52. District Farms.—The post-war plans provide for one large district farm in each of the 8 districts. Their inauguration should be phased. Special priority is needed for four district farms, namely, (1) Hyderabad District, (2) Mirpurkhas (Thar Parkar District), (3) Shorki (Karachi District), and (4) Dokri (Larkana District). It may perhaps be possible to reduce the proposed number by locating some of the farms so as to serve the interests of 2 neighbouring districts. The area of each farm should be not less than 2,000 acres. They would be composite farms serving the purposes of seed multiplication, cattle breeding and dairying, testing of improved seeds and manures, horticulture including the supply of nursery plants and vegetable seeds, poultry breeding, small herds of sheep and goats and training facilities for tractor drivers, etc. There would be separate sections for each of these activities. The educative value of these farms through demonstration in all aspects of practical agriculture, animal husbandry, and village welfare peculiar to the tract, would be considerable. One of the greatest and most urgent needs of the Department is increased facilities whereby the improved seeds of wheat, cotton, rice and other crops can be multiplied under departmental control until they can be made available in large commercial quantities for general distribution to the public. The demand for improved seeds exists. The present arrangements for the multiplication of these seeds is defective.

53. The Hyderabad District Farm should be located within fairly easy reach of the town. This will be the proposed new site for the Agricultural and Veterinary Colleges and this farm will feature prominently in the training of students. The Thar Parkar District Farm will have as its components, the existing farms at Mirpurkhas, namely Fruit Farm, Seed Farm and Cotton Breeding Farm, but the Seed Farm will need early expansion to about 1,000 acres in order to accommodate the breeding herd of Thari cattle and other live-stock, and to afford greater facilities for seed multiplication.

54. Farm Staff.—The staff at each district farm would include a Farm Manager with the pay and status of a District Superintendent Class I, except for Manager of the Hyderabad District farm who should have the pay and status of a Deputy Director of Agriculture. One Botanist Class II at each farm would be in charge of all field experiments with plant varieties. The subordinate staff should be provided as deemed necessary.

55. Taluka Farms.—There should be at least one taluka farm of about 50 acres in each taluka. These are required mainly to test experimentally under local conditions the suitability of new varieties of seed. They would serve the additional purposes of maintaining breeding bulls and poultry flocks, supplying nursery plants and vegetable seeds, and demonstrate all the improved agricultural practices indicated in the schedules of cultivation of the different crops. The non-experimental areas would be cultivated by *haris*, but the terms of employment should be sufficiently attractive to seek their aid on the experimental areas. This can best be done by offering them a larger proportion of the crops they cultivate than is customary. One graduate assistant assisted by one or more malhis should be in charge of each farm.

56. Much care would be needed in locating these farms paying special regard to (a) proximity to taluka headquarters or to a railway station, (b) easy access by road, (c) sweet fertile land free from salt, (d) the boundary should be contiguous with a canal or its branch so as to enable the land to be irrigated by direct pipe supply; (e) authorised supply of water should be enough to attain 100 per cent intensity and arrangements made for water to be used only in day time.

57. Each taluka farm should be in charge of a graduate assistant working under the direction of the District Superintendent. The subordinate farm staff will be determined by the number and nature of the experiments conducted each year.

(4) FRUITS AND VEGETABLES.

58. The environmental conditions in Sind are favourable to the production of a large variety of tropical and sub-tropical fruits and also of tropical, sub-tropical and temperate vegetables. This development is in its infancy. The main factors which militate against a considerable expansion in the cultivation of fruits and vegetables in the Barrage zone are :—

- (a) restrictions on the allotment of extra water for orchards,
- (b) the batai share cropping system of cultivation, and
- (c) shortage of nursery plants and seeds.

59. **Water-supply.**—With the existing assured water-supply in perennial Barrage canals, the intensity of cultivation with annual cropping rarely exceeds 60 per cent including both rabi and kharif crops. The remainder of the land lies fallow during the year. Orchards demand more water than the customary crops of wheat and cotton, and in consequence, if the area under orchards is extended, the area under the customary crops has to be reduced, unless the landowner receives an extra supply of water. The present rules of the Irrigation Department permit an extra supply not exceeding 5 per cent of the authorised discharge from any outlet for use in developing the orchards. This enables him to plant about 2 per cent of his area with fruit orchards when using his basic quota of extra water, but subject to his owning all the land on the water-course. If he extends his orchard further then as water is the limiting factor, he will, of necessity, have to reduce the areas allotted to wheat and cotton. This may result in fruit cultivation being uneconomic. Where land on a water-course is owned by a number of zamindars, the irrigation rules governing extra supply for orchards are such as to give little, if any, encouragement to fruit and vegetable culture on a commercial scale.

60. **Village Orchards.**—The attention of all zamindars should be drawn to the desirability of allotting relatively small areas near every village for fruit and vegetable culture with the main object of providing the haris and their families with the produce at nominal rates. This arrangement will need a *malhi* being employed at the expense of the zamindar. His pay would be recovered from the sale proceeds of the produce. All tillage operations can be done co-operatively by the haris but as an alternative one pair of bullocks could be maintained at the zamindar's expense. Facilities for training malhis are provided at the Mirpurkhas Fruit Farm.

61. Small Holdings.—Fruit and vegetable cultivation does not lend itself to the batai system. Paid labour, as distinct from batai labour, is notoriously inefficient, unless it is properly supervised. It does not pay to engage supervisors on small orchards. There is however scope for establishing small orchards on small holdings in virtue of the occupier's being the worker,—but small holdings are rare in Sind.

62. Nursery Plants and Seeds.—The demand for nursery plants and for seeds of fruits and vegetables is considerably in excess of the supply. There is need for a big expansion in the activities of the Department in meeting the demand. The Mirpurkhas Fruit Farm has recently been extended, but this is not enough. Every district and taluka farm which will have the desired facilities in land and water should have a fruit and vegetable nursery whose object should be to meet the public demand for seedlings, grafts and seeds. The commercial cultivation of fresh fruits and vegetables on Government farms designed to meet the local market demand should be restricted and the production of nursery plants and seeds, intensified.

63. The fullest use should be made of the facilities afforded by P.W.D. rest-houses to meet the local demand for nursery plants and seeds. Most of these bungalows have gardens where some fruit trees are already established. These can be used for grafting, but the work needs to be planned so as to include a fresh selection of fruit trees. Vegetables should be grown primarily for seed and seedling production. The supervision of this work would need extra staff with adequate camel transport to cover the long distances separating the rest-houses.

64. Propagation.—Most fruits and vegetables can be propagated locally by seedlings, grafting or budding in numbers adequate to meet the demand. This does not apply to potatoes and bananas for which special provision has to be made.

65. Potatoes grow well in Sind, but the seed has to be replenished from outside sources each year. Before the War, the sources of supply were Italy and Baluchistan dependent on the time of sowing. During the War the annual supply of seed potatoes has been obtained from the northern Indian hills and the Nilgris. Timely arrangements should be made each year to import the requirements of the Province in adequate quantity, and Italian seed should again be imported as soon as facilities permit. The provision of cold storage for seed potatoes at Karachi and Sukkur, is a matter deserving consideration.

66. Many varieties of bananas, fruit well in Sind. But the supply of suckers is much below the demand. Facilities should be afforded to private enterprise to import banana suckers by special rail priority.

67. Preservation.—Very little work has so far been done to demonstrate methods of preservation of vegetables, fruits and fruit products in Sind. The scope for this line of activity will increase rapidly as the young orchards come into production. The demonstration plant and equipment should be up-to-date and in charge of an expert. Facilities should be afforded for training in the handling of the equipment and in proper methods of preservation.

68. All plants issued or in store at Government farms should be certified free from disease. This would need the construction of fumigation chambers which need not be costly to construct or to operate. At taluka farms and P.W.D. rest-houses, supervising staff should be trained in controlling diseases. The issue of plants should be discontinued from any station where any plant disease cannot be completely controlled.

69. Adequate stocks of spraying and dusting machine, insecticides and fumigants should be maintained at this farm for its own use as well as to provide the desired services to owners of orchards.

70. **Staff.**—The staff required for fruit and vegetable development would include a fruit and vegetable expert in Class I, with an assistant in Class II at each of the district farms. The strengthening of the subordinate staff at the Mirpurkhas Fruit Farm needs immediate attention.

(5) CROP PROTECTION.

71. In the past both research and extension work concerned with the protection of crops from pests and diseases has been neglected. The staff of the Entomological and Mycological sections need considerable strengthening with the view to identify the pests and diseases of crops to investigate the life histories if not already known, to test remedial and control measures, to demonstrate these measures on zamindari lands, and to arrange an adequate supply of insecticides, fumigants and appliances.

72. Whereas some insect pests and diseases can be controlled by destroying them, another recognised method of reducing the damage done by some of them is to breed plants which succeed in defeating or dodging the pests. This applies in particular to early maturing varieties of cotton which evade the boll-worm, and early maturing varieties of wheat which evade rust disease.

(6) MANURES.

73. It is surprising what little use is made of manures in increasing the productivity of the land in Sind. In the absence of salt, all lands will continue to grow crops indefinitely without manures; but without manures the natural fertility of irrigated lands soon reaches its lowest ebb which remains constant. In order to maintain agricultural land in good heart, it must receive organic manure. The main sources of organic manures are green manures, cattle manure and village refuse.

74. **Green Manures.**—The cheapest and easiest method of keeping irrigated land in good heart is by growing leguminous crops and ploughing them into the land before they mature. Green manure crops can be sown either in kharif or rabi, and they can be fitted into the cropping scheme so as to enable them to be sown during those short periods when canal water is not urgently required for the main crops. If a few inches of rain fall, after the green manure is sown, then no further irrigation is required; and if no rain falls, the growth of the crop will still be sufficient to be beneficial as a manure. From the early days of the Lloyd Barrage, Government has encouraged this practice by granting concessions in land revenue assessment on green manured crops, but this has had little effect in popularising the

practice. Some of the more progressive zamindars grow green manures both in rabi and kharif on a large scale. The rules governing concessions in land revenue assessment on green manure crops will need revision before the rules can be expected to act as an incentive in popularising the practice.

75. Chemical Fertilisers.—The chemical fertiliser for which there is greatest scope in Sind for increasing production is sulphate of ammonia. The Government in its desire to popularise the use of sulphate of ammonia for the production of food crops, is now supplying it to growers at half the cost price for demonstration purposes. This policy of Government should continue for at least 3 years on an increasing scale. During the demonstration period, the distribution of the manure at concession rates should be such as to make it available in small lots to as many *haris* as possible, to enable them to see the difference between the growth of the manured and unmanured parts of a field. This necessity arises from the fact, that the cost of the manure is borne in equal shares by the zamindar and the *hari*, and it is necessary to convince both that the practice is a profitable one.

76. There is need to plan extensive experiments with all the major crops in varying conditions of soil and climate under Barrage conditions so as to discover the optimum doses of sulphate of ammonia which will give the most economic returns. The proposed district and taluka farms will afford these opportunities.

77. Village Refuse.—Though *haris* are becoming increasingly conscious of the value of cattle manure for increasing the yields of their crops little is done to conserve village refuse. In the interests of village hygiene as well as of increased crop production, every village should have its manure pits as a repository for all village refuse. The pits should be allocated one to each house, and if they can be dug at irrigation level, then decomposition can be hastened by an occasional watering of the pit to form compost. These pits should be a feature of all villages in "concentrated areas" serviced by the mobile cinema. They need to be subsidised only to the extent of the cost of excavating the pits. If the pits are 3 feet deep, then they will also serve as a much needed repository for night soil.

78. Agricultural Workshop.—This is now located at Hyderabad. Its present activities are mainly confined to the maintenance and repairs of the few departmental tractors and pumping plants, the fabrication of a few improved farm implements, some iron work for the P.W.D. and the production of some Military requirements.

79. With the anticipated increase in the use of farm tractors, the main activity of this section should be directed to servicing and repairs to departmental and privately-owned tractors and tractor implements. As the use of these extends, there will probably be need for a mobile workshop with a fitter on the scale of one for each district.

PART III—ANIMAL HUSBANDRY.

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80. **Cattle Farms.**—The agricultural plans provide for cattle breeding farms with a Red Sindhi herd at the proposed Hyderabad District farm, a Thar Parkar herd at the Mirpurkhas Seed Farm, a Bhagnari herd at Dokri Research Station or a more suitable site on the Right Bank and a buffalo herd at Shorki Rice farm. The main object of these breeding farms would be selective breeding to combine the qualities of high milking capacity and sturdiness so as to enable improved breeding bulls to be supplied to the districts.

81. When issuing breeding bulls priority should be given to Veterinary Hospitals, Dispensaries and Government farms throughout the Province. These bulls should be maintained at Government expense and no fees charged for service. Records of all servicing should be maintained and the bulls exchanged with other departmental bulls after 3 years service at any stud.

82. Landowners should be encouraged to maintain their own cattle breeding farms, and gaushalas encouraged to maintain pedigree bulls. Special facilities should be afforded to those who agree to conform to Government plans. The herds of milch cattle in the environments of Karachi and Hyderabad would need special attention.

83. In "Concentrated" areas one Government bull should be located at each of the 15 villages in the circuit of the mobile cinema. The present arrangement whereby selected bulls are purchased in the open market and issued to influential landowners who may be trusted to take good care of them should continue until the proposed cattle breeding schemes are in full production. No bulls should be purchased unless they are true to type.

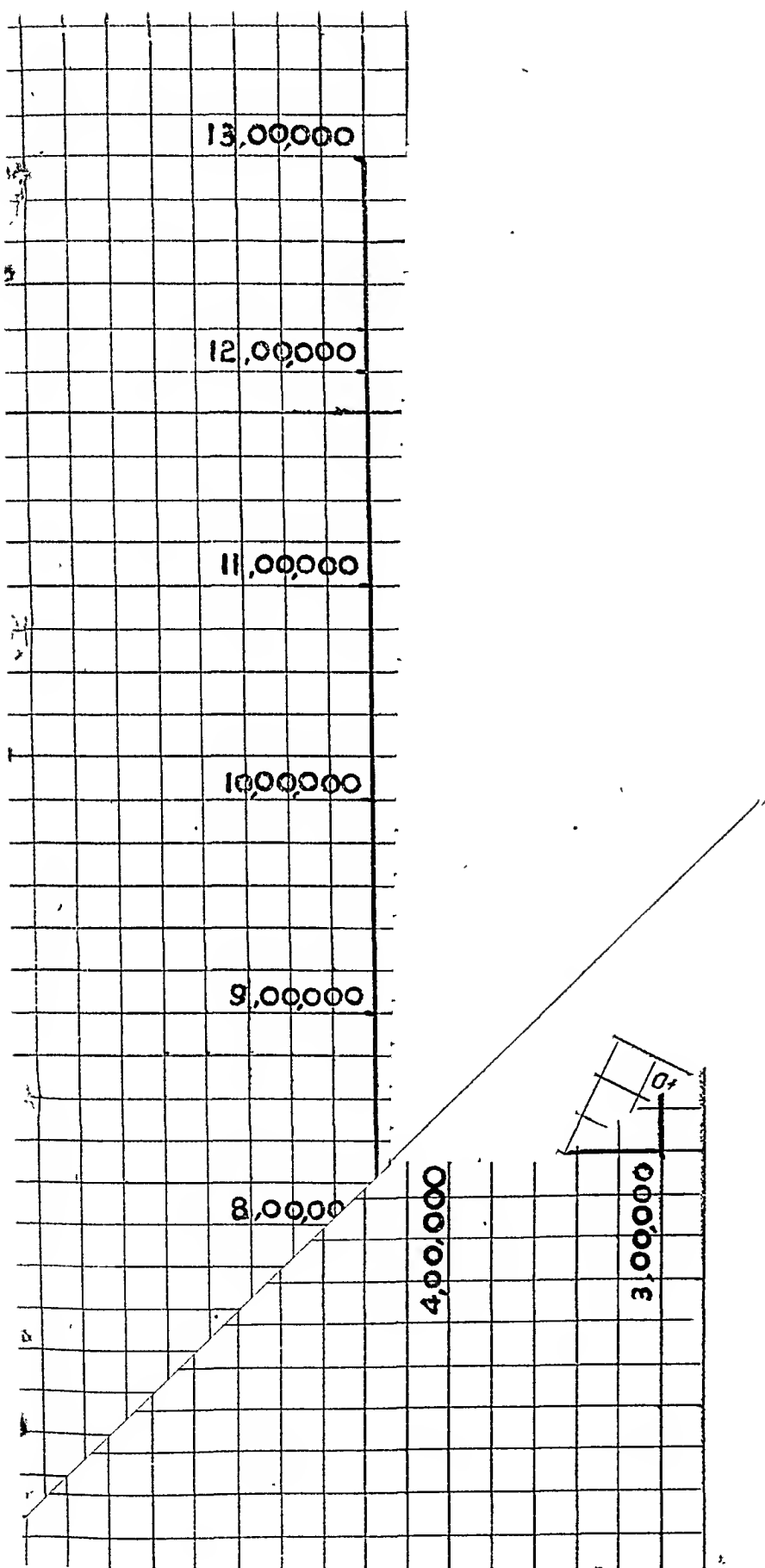
84. To enable large herds of breeding cows to be maintained at the breeding farms, arrangements may be made with selected zamindars to take charge of the young stock and dry cows on terms which will ensure their proper care and maintenance.

85. **Poultry.**—Poultry thrives in Sind when they are allowed free range as is customary under village conditions. But when they are bred under confined conditions they are highly susceptible to many diseases and the casualties are heavy. The indigenous Indian Game breed is hardy and is a good table fowl but an indifferent layer. The value of poultry under local conditions lies more in their egg producing qualities than in their table qualities. The White Leghorn and the Rhode Island Red are almost as hardy as the Indian Game bird under range conditions, and as egg-producing machines they excel. The agricultural plans provide for foundation flocks of poultry at each of the Government farms, Veterinary hospitals and dispensaries. At each centre eggs, young chickens and matured birds will be produced for general distribution to the public at attractive prices. In the concentrated areas small flocks will be maintained at each village in the mobile cinema circuits.

STATEMENT SHOWING THE AREAS OF CULTIVATION FROM THE YEAR 1889 to 1940.

Year.	Rice.	Wheat.	Barley.	Jowar.	Bajri.	Cotton.
1889-90	...	3,87,271	27,190	5,84,988	7,68,386	99,827
1899-1900	...	3,47,445	18,910	6,27,170	3,87,508	91,091
1909-10	...	4,46,698	25,694	5,05,284	10,72,260	2,10,668
1919-20	...	5,64,513	32,049	6,04,980	9,54,873	3,12,099
1929-30	...	6,76,813	20,062	7,20,594	12,31,338	3,20,070
1939-40	...	12,70,563	21,954	4,32,129	4,84,158	8,54,390
1949-50 (*)	...	-	Not available.	-	-	-

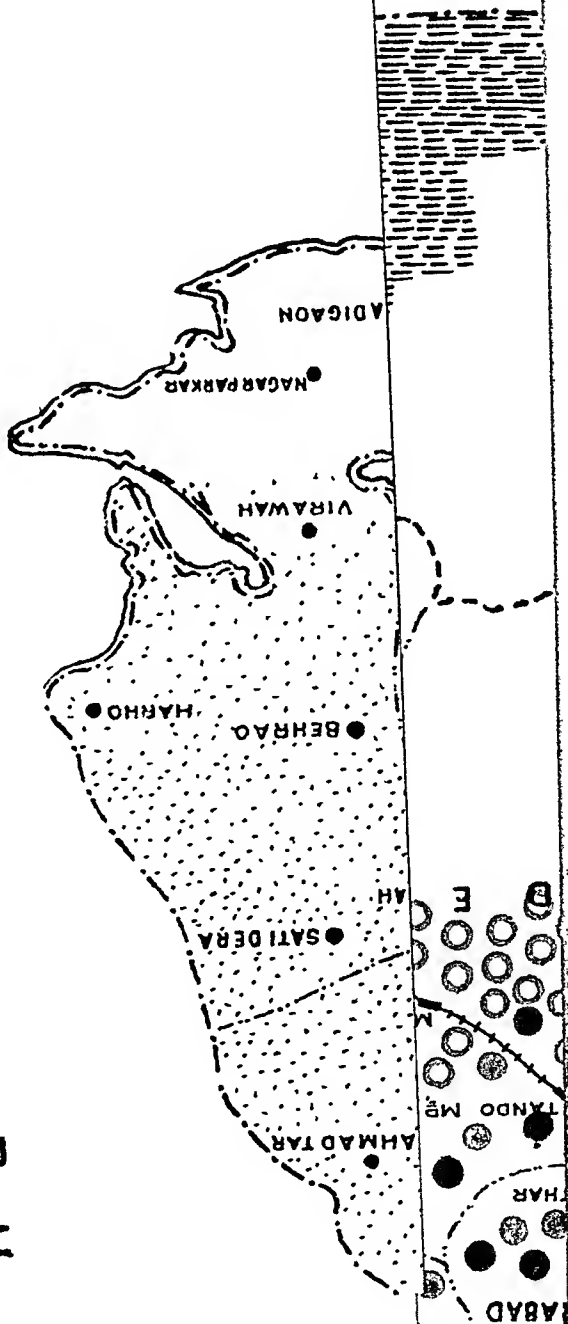
(*) ... 1949-50.



DEVELOPMENT OFFICER

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X.—FORESTRY.

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Schemes in the prescribed form have not yet been prepared under this heading of development, but this will be done as soon as the Additional Conservator of Forests is actually appointed. They will be based more or less on the Note prepared by Mr. J. Petty, M.C., O.B.E., I.F.S., former Conservator of Forests in Sind, and printed at pp. 170—184 post. Reference is also invited to Chapter X of Part I of this publication.

X—FORESTRY.

Extracts from the Note prepared by Mr. J. Petty, M.C., O.B.E., I.F.S., former Conservator of Forests, Sind, on the development of Forests and Woodlands in Sind.

PART I.

(a) *Pre-war period.*

1. The Indus valley has always been well wooded because the chief indigenous trees (Babul, Kandi and Lye) yield seed profusely which readily germinates and, in consequence, any land that receives regular canal, river or flood irrigation is soon covered with jungle unless man interferes. But the higher lying areas which receive no irrigation other than rainfall (average 4"-7" annually) are only scantily covered with vegetation.

2. On the hills in the West of Sind (where the rainfall averages about 7" annually and there is no artificial irrigation) only a sparse ground covering is found of hardy annual grasses and plants together with a few scattered shrubs and trees. Between the hills, however, there is much more vegetation and some of the nullah beds and banks are well wooded with a stunted but healthy trees. The commonest tree is Kumbhat which appears to be reproducing itself naturally. Kandi, Lohinio, Olive and other trees are also found but no seedlings of these or these species. The most important of the smaller trees or shrubs is Gugul, which yields the Gum Mukhal of commerce, but there are other valuable medicinal plants.

3. Those called desert areas in the East of the Province (rainfall average 7"—15") have a thicker ground covering of grasses, shrubs and trees than the label "desert" would indicate. The amount of vegetation gradually increases towards the borders of Sind, Rajputana and Cutch where the rainfall is the greatest. Most of the trees and shrubs are similar to those growing in the hills.

4. No efforts have been made in the past to improve and increase the fodder supplies, etc., or to counter erosion either in the hills or in the desert though these together cover 30,000 sq. miles which is about two-thirds of the area of the whole province.

5. The zamindars in Sind have always been encouraged to raise plantations of trees ("huris") by assessment concessions and in some areas—particularly around Hyderabad—"huris" are part of the regular farming system. Babul is sown on poor or "tired" land and closely grown for 8-10 years. When felled, it yields about 2,000 c. ft. an acre which pre-war fetched about Rs. 100.

During the rotation, the "huri" is supplying fuel, hutting material and leaf fodder for animals, and all the time the trees are improving the soil. From the newly cleared land, yields of 25-30 mds. an acre of cotton are obtained for 2-3 seasons.

6. In former times the canal banks, sides of roads and tracks, open spaces in towns and villages, compounds of rest-houses and Government buildings, caniping sites, etc., etc., were regularly planted and watered (it has been stated that such was the enthusiasm at one period, the ability of a Mukhtiar-kar was judged by the number of trees he had had planted). Unfortunately, interest in this admirable work gradually ceased. The roadside trees were first neglected and then haphazardly felled and—since the Local Boards took over many roads—have now almost completely disappeared. Village and (in many cases Municipal) trees are normally hacked and lopped to such an extent that they give no shade and have no aesthetic value, whilst the P. W. D. canal bank planting was completely stopped a few years ago as a measure of economy (a very false economy) and staff for maintenance has been so curtailed that these valuable trees, lacking protection and silvicultural treatment, are deteriorating.

7. The reserved forests cover approximately 1,100 square miles which is just over 2 per cent. of the Provincial area of 48,000 square miles. Two-thirds of Sind are, however, so called desert or hills and the percentage of forests to the cultivated or potentially cultivable area is 6 per cent. In the other provinces in India the average forest to total area is 14 per cent. In the eighteen-nineties it was proposed to earmark a further 200 square miles in the East of the Province to be converted eventually into Reserved Forest but unfortunately this work was never completed.

8. Until the outbreak of war, however, in spite of the smallness of the forest estate, Sind was a surplus wood fuel area but produced little good quality timber, most of which is required for public works, better class housing etc., had to be imported.

9. For some years the revenue of the Sind Forest Department averaged about Rs. 8 lakhs annually, the expenditure about Rs. 4 lakhs and the surplus also Rs. 4 lakhs. For comparison with earnings of other provinces figures for 1938-39 are given below:—

Province.	Forest area in acres.	Revenue per one acre.	Expendi- ture on establi- ment per one acre.	Total expendi- ture per one acre.	Surplus income per one acre.	Percent- age of surplus to expendi- ture.	Percent- age of surplus to Re- venue.
		Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.		
Sind ..	7,39,044	1 2 10	0 7 0	0 7 8	0 11 2	147	59
U. P. ..	39,50,627	1 6 1	0 7 4	0 12 6	0 9 7	77	43
Bombay ..	68,66,321	0 9 6	0 4 8	0 6 3	0 3 3	51	34
Punjab ..	33,17,633	0 11 1	0 5 5	0 12 8	0 1 7 (deficit).	....	....

(The Punjab Forest Department was expending large sums on anti-erosion schemes which were not then producing revenue though yielding valuable indirect results.) It will be noted that pre-war Sind was spending only two-thirds of an anna an acre on the development of the estate; Bombay over twice as much, and the U. P. and Punjab eight-ten times more.

(b) *The War Years upto 1945.*

10. Until the end of 1941 the general position in Sind did not alter much but during the past three years there have been vast changes. The demand for wood and wood products steadily rose because of the requirements of the war effort, the increase in population in the urban areas (due mostly to industrial development but partly caused by insecurity in the countryside as a result of the Hur menace), the scarcity of steam coal so that many industrial concerns had to depend on wood for power, etc., etc.

11. It is estimated (it must again be stressed that the figures given are only estimates) Sind is now producing 48-50 million c.ft. of wood a year excluding that obtained locally and consumed in the villages and hamlets. This is about 30 per cent. more than pre-war. Export to the Near East by Sea had to be stopped in 1942 but export to Baluchistan (on both Civil and Military account) and to the Punjab (mostly on Military account) continues. In all, however, exports are less by probably 5-6 million c.ft. than pre-war. Consumption in Sind, therefore appears to have risen from about 28 million c.ft. to 43-44 million c.ft. which is an increase of between 50 per cent. to 60 per cent.

12. The greatest proportionate consumption increase is in the urban areas. For example, Karachi pre-war consumed annually about 4 lakh maunds of charcoal and a similar quantity of firewood ($6\frac{1}{2}$ million c.ft. wood) and now requires more than 12 lakh maunds charcoal and 8 lakh maunds firewood (18 million c.ft.) which is an increase of nearly 300 per cent. Amongst the reasons for this, are expansion of population, shortage of oil, steam, coal, etc., but probably one of the chief causes is the improved standard of living due to greater prosperity.

13. As prices for agricultural produce rose and the 'grow more food' campaign started, the demand for cultivable land increased and vast areas formerly under tree and scrub growth have been cleared and this process continues. The rates for wood have also increased greatly and "huri", owners, etc., have been encouraged to fell their plantations. In consequence the outturn of wood from "other sources" has continued at a high level but there has been little replacement planting, and it is obvious, therefore, that the supply of wood to the main markets from these sources will soon decline from a flood to a trickle.

14. More serious still is the shortage of wood in the rural areas. In parts of the Thar Parkar District cowdung is now being used regularly for domestic heating, and near Umerkot the trees in the desert are being cut to supply the town and local brick kiln with fuel. In other districts also the situation is bad and is getting worse. There is still a considerable amount of scrub and small tree growth in the Sind countryside and in some areas such

as the riverain lands outside the reserved forests, the Makhi Dhandh, etc., there are ample stocks but these supplies are of little general use as the cultivator requires easily accessible source of wood.

15. So serious is the situation likely to become in the near future that a proposal was submitted to Government in 1944 that all jagirdars and zamindars owning estates of 100 acres or more should be compelled by legislation, (amendment of the Land Revenue Code or other means) to keep $7\frac{1}{2}$ per cent. of their land under tree growth. Official opinion is that some action on these lines is essential, and this subject will be discussed later in the Note.

16. In order to develop the P. W. D. estate as fully as possible a suggestion was made that the Forest Department should manage the tree growth on these lands as is done in the U. P. The Chief Engineer agreed in principle but it has, unfortunately, not yet been possible to frame a definite scheme owing to the shortage of forest staff.

17. A provisional working scheme for systematic roadside avenue planting was submitted to the Superintending Engineer, Roads, last year; and on the main Hyderabad-Sukkur Road some experimental planting has been started on a small scale. Briefly the proposal is that one species of tree shall be planted in each mile length as this will ensure an unbroken shade line for a long distance. The silvicultural management of the trees will also be simplified if the crop is not mixed.

A suggested succession for a 20 mile stretch was made as under :—

Mango, Tali, Gidamri, Sirius, Jaman, Tali, Rain, Gidamri, Nim, Pakar, Mango, Bahan, Tali, Arjan, Gidamri, Jaman, Sirius, Tali, Gidamri and Nim.

A further suggestion was that near each milestone a small group of flowering trees or shrubs should be planted for decorative effect.

18. During the past few years the forests have been seriously over-worked. 19 million c. ft. was formerly well within the productive capacity of the estate but the 1936-41 low abkalanis reduced the annual volume increment to such an extent that in 1941 it was decided that the cut, if it was to be regularly sustained, should not exceed 15 million c. ft. The requirements of the War Effort, however, not only prevented any such curtailment of output but made it necessary to augment the felling programme. The 1943-44 cut was approximately 32 million c.ft. which is more than twice the "safe" figures of 15 million and nearly 70 per cent. above the pre-war average cut. The mature areas are thus being gravely overfelled and capital is being rapidly consumed. The general position, in consequence, is obviously far from satisfactory but it is perhaps not quite so serious as the above figures indicate.

PART II.

Objectives (Not necessarily in order of importance).

19. To establish woodlands throughout the rural areas to ensure :—

(a) adequate supplies of small timber for hutting and agricultural implements,

(b) cheap and easily accessible fuel so that cowdung cakes need not be used for domestic heating, and

(c) sufficient windbreaks are provided to prevent damage by wind erosion.

20. To protect the so-called desert areas in the East of the Province in order to :—

(a) prevent the disappearance of the ground cover of vegetation which alone prevents serious wind erosion, and

(b) increase the fodder supplies so that these areas can support larger herds of cattle.

21. By means of anti-erosion operations on the semi-barren hills in the West of Sind :—

(a) assist the control of flood waters, and

(b) improve the soils and increase the vegetation gradually, so that these areas may become more productive.

22. To expand and develop the Forests and other Government estates (such as the P. W. D. canal banks, etc.,) in order to :—

(a) provide adequate supplies of charcoal and firewood for the urban areas,

(b) produce eventually most of the timber required in the Province for housing, etc., and for industries which consume timber such as manufacture of sports goods, etc., and

(c) meet the demands of the valuable export fuel market.

23. To provide amenities by establishment of roadside avenues throughout the Province, Green Belts around all the expanding urban areas, etc., etc.

24. It is not easy to estimate the quantity of wood that must be produced to satisfy Sind demands (excluding the rural areas which will, it is hoped, obtain their supplies from local sources). The population in the Towns is rapidly increasing and the urban standard of living is rising, and when the new Barrages are constructed this expansion will continue even more rapidly. In normal times other fuels for domestic heating will be available ; but if industrial development takes place on the scale envisaged in many of the post-war development plans, coal and oil will be required for industry in such enormous quantities that there may not be any cheap alternative fuels to charcoal and firewood for domestic heating. Whatever happens, there is no doubt that more wood will be required than before the war when the Sind consumption appears to have been about 28 million c. ft. An annual production of 55-60 million c. ft. (twice the pre-war consumption and 50 per cent. more than pre-war outturn) within 2-3 decades is a not an unreasonable target. Should Sind not require the full quantity within the period mentioned there is little doubt that the export markets will absorb any surplus. Half the pre-war outturn of about 38 million c. ft. was obtained from "other sources" which are not likely to have any large surpluses in future ; in consequence, the forests will have to produce the bulk of the 55-60 million c. ft. required and production (pre-war 19 million c. ft.) will have to be increased three-fold.

PART III.

RECOMMENDATIONS.

(a) Rural Areas.

25. The main industry in Sind is agriculture and its prosperity is of cardinal importance. For a balanced rural economy adequate supplies of free or very cheap and easily accessible wood are essential.

26. In future wherever large blocks of land are being developed (e.g., Makhi dhand, land commanded by the new Barrages, etc.), some areas must be set aside near each township and hamlet for woodlands. These woods should preferably be in charge of the leading zamindars, to ensure proper protections but the planning of the plantations, technical advice, etc., will have to be provided by the Forest Department.

(b) The Desert.

27. The desert in the East of the Province maintains large herds of fine cattle, and with the help of cultivation on rain water, sustains a small population. Until recently, however, when a Desert Farm Experimental Station was opened near Mithi, nothing has been done to develop or even preserve, the vegetation. Enquiries made from the local "oldest inhabitant," etc. indicate that there are now far fewer trees than there used to be, whilst along the fringe of the desert adjoining the irrigated lands and also around all centres of population, there is obviously severe over-grazing, and near Umerkot, there are signs that the desert is beginning to encroach. The effect of erosion by wind or weather, and desert encroachment is not easily recognisable especially in the beginning when the process is slow; but if unchecked, the damage done is colossal. Lakhs of acres of fertile land in the "dust bowl" in the United State of America have been ruined by wind erosion, and if the vegetation ground cover in the Sind desert is allowed to disappear, wind erosion will soon make these areas totally unproductive and may well damage severely or ruin many fertile lands elsewhere. It has been suggested that, because the prevailing wind is south-west, the Indus valley will not suffer if the desert sand is eroded; but nature does not always behave as expected, and, of course, such a petty provincial attitude is deplorable.

28. Little is known of the rate of growth of the desert flora, how many acres are required to maintain one animal, etc., etc., and research is urgently needed; but this will take years. Meanwhile, to ensure that some parts of the desert are properly managed, it is proposed that areas as under, should be declared Reserved Forests:—

(a) A strip of the desert between 5-10 miles wide along the fringe where it impinges on the irrigated cultivation. This forest strip would start north of Sanghar and run *via* Khipro, Umerkot, Nabisar and Naokot to Rahemki Bazaar.

(b) A similar strip along the Sind-Cutch border from Rahemki Bazaar *via* Adhegam to Berano.

(c) Areas of 10 miles radius around all the main centres of population in the desert.

29. For these forests, working plans will be made, which will ensure systematic closure to grazing for long periods, to allow natural and artificial reproduction, that the number of cattle allowed to graze is not above the fodder capacity of the land, and that cutting, hacking and lopping of the existing tree growth is curtailed. Two or three experimental stations on similar lines but on a smaller scale to the desert farm at Mithi, must be established for research purposes, not only to study reproduction and rate of growth of the desert flora, the propagation of the more valuable fodder plants or dwarf trees such as Gugul (from which Gum Mukhal is obtained), etc., but also the cutting and storage of fodder grasses, because in this area of uncertain rainfall some scheme similar to Famine Relief Grass Storage as carried out in the Bombay province, is necessary to mitigate the disasters that always occur when the rains fail.

30. A Divisional Forest Officer, Thar Parkar (with a staff of Range Forest Officers, Surveyors, etc.), must be appointed as soon as possible to study the whole question in conjunction with the Revenue Officers and put up more detailed schemes. It should be possible to complete the preliminary investigation and the settlement within about 3 years.

31. The population is increasing along the fringe of the desert, as more and more land is being cleared for cultivation. Unless grazing grounds are available and cheap and easily accessible wood can be obtained, the desert vegetation will be used. It is proposed therefore, that some blocks of reserved forest should be established between the desert and the cultivated area to provide wood for local industry such as brick-making, and meet the requirements of the growing population centres in the Thar Parkar and Nawabshah districts.

(c) *The Hill Areas.*

32. From a distant prospect, the hills seem to be devoid of any vegetation, but a closer inspection reveals a varied flora which includes a number of grasses, shrubs and plants, together with a few stunted trees, some of which have fodder value. The depressions and nullahs contain many more trees and shrubs and the growth is comparatively good. In all, there is sufficient vegetation to support a fairly large animal population—particularly during the rainy season—but not sufficient to stop erosion and floods. At times, the floods do immense damage as in 1944 when the Gaj River in spate broke through all the protective stone work and bunds, ruined large areas of crops and damaged much fertile land. Such floods cost the Province many lakhs of rupees, but nothing has ever been done to try to stop these floods at their source, which is the river catchment area.

33. In the Punjab, re-afforestation of the foot-hills has been in progress for some years, and already striking results have been obtained. The Punjab Government would probably allow one of their anti-erosion experts to visit Sind and to give advice on the subject. It must be realised, however, that the rainfall here is comparatively so small that afforestation will be an extremely slow process, but if Baluchistan will co-operate with Sind in this work, which should be concentrated to begin with on one river system—for instance the Gaj River—much experience will be gained and certainly with valuable results.

34. Apart from contour trenching, contour bunding, gully plugging, etc., much might be achieved if nature is given a chance. With ever increasing herds of animals, particularly goats and sheep wandering over the hills, the vegetation has no chance to flourish or increase. A few selected areas should, therefore, be declared reserved forest and working plans be made to ensure results as mentioned in para. 28 in connection with desert development.

35. The most obvious area for this is the Dumlotee catchment from which Karachi obtains much of its water-supply. If the tree-growth and other vegetation could be augmented considerably, the rain-water would be absorbed instead of running off the hills, and a much larger volume of water would reach the underground channels instead of flowing into the sea along the Malir river bed. Parts of the catchment area are privately owned and there may be "rights" and privileges. The owners of such lands or "rights" must be compensated or promised the bulk of revenue which will result from proper management. As a first step, whilst survey is being made, the local Revenue Officials might be able to persuade the local people to close grazing one valley or one side of a valley. Many wired enclosures must be established in this area also (as suggested for the desert), to show closure effects and for experimental purposes.

36. Another area obviously suitable for development, is the plateau in the vicinity of Thanu Bula Khan and the area between that village and Kotri. The co-operation of the local population here, as elsewhere in the desert and hills, will be required and probably a Forest Officer would be the best person to persuade the people to help. If he also had some powers, it would be of great assistance, and it is recommended, therefore, that the Kohistan Mahal (where there is comparatively little crime) should be put in-charge of a Range Forest Officer (Forest Officers hold similar charges in parts of the Bombay Province). This Officer could manage a small experimental station at Thanu Bula Khan and after a year or two could report on the possibilities of afforestation, closure, etc., etc.

37. A third area suitable for experiment, which might be declared forest is the land at the foot of the hills between the Gaj bungalow and the Manchar lake. There is some tree-growth in the nullah beds, and with proper management the area would undoubtedly maintain far more Lai and other trees. Wood is badly needed in the small townships situated at some distance from the river in the Dadu and Larkana districts and these new forests might help to meet requirements.

38. A Sub-Divisional Forest Officer with a small staff should be appointed as soon as possible to start surveys, propaganda, etc. The staff to carry out larger operations can gradually be built up.

39. More definite and detailed proposals cannot be given at present as little is known about what can be achieved in areas having a rainfall of 7" or so. But if the above suggestions for the hills and desert are adopted, a mass of extremely valuable data will be available within a few years and, Government can then decide on what scale further operations shall be carried out. Whatever decisions are reached in future, the almost complete neglect of 30,000 square miles of territory must certainly cease, if Sind is to be fully developed.

(d) The Forest.

40. Working schemes for each Irrigated Plantation will also have to be prepared. These plantations are only in their infancy and there is still much to be learnt. Amongst the problems which require research are as follows:—

(a) The minimum quantity of water which will yield an outturn of 100 c.ft. of wood for one acre a year.

(b) The best irrigation methods, *i.e.*, what should be the width and depth of the trenches and should they be dug alongside the tree lines or midway between the lines?

(c) What modifications of technique are necessary to avoid "wilt" disease which has appeared on a small scale in Khathar—Khatro I. P. areas?

(d) What better fodder grasses such as Giant Star grass, etc., can be established without damage to the soil fertility?

(e) What timber trees can be produced, etc., etc?

41. Of the exotics, Mulberry has already proved a success and one species of Willow is growing well. After the war is over, some cuttings of the true "Cricket bat" willow should be imported from England, as if this tree can be grown in Sind, as appears possible, the Province (with the Mulberry and Bahan) will be producing all the raw material required for a sports goods industry. Amongst other exotics, particular attention should be paid to Bamboos which would prove most useful for hutting and "Acacia Mollesema" and "Acacia decurens" which yield the valuable "wattle bark" now being imported in vast quantities from South Africa for tanning work.

42. In every Irrigated Plantation also, a small area should be laid out as an orchard.

43. Schemes for Irrigated Plantations covering nearly 40,000 acres have now been sanctioned by Government and working has started or is just starting. During the next 5 years it should be possible to increase this area perhaps to 75,000 acres, if the P. W. D. continue to give their valuable help, as heretofore. Forests in which Irrigated Plantations might be established or expanded in the near future are:—

(1) Gharko, Penah-Huderani, Mulchand and Hazari in the Karachi Division.

(2) Garhi Yasin, Kot Sultan, Muhromari and some of the smaller forests in the Shikarpur Division.

(3) Ghotki and adjacent forests and Adalpur in the Sukkur Division.

Little further development is possible in other divisions as existing schemes cover all the available forests or will utilize all the available water. Any further major conversions of Inland forests into Irrigated Plantations will have to wait until the new Barrages function.

(e) Miscellaneous.

44. The complete afforestation of the P. W. D. estate must be carried out. Trees on the canal banks should be grown for timber and in the borrow-pits, etc., for fuel. In the United Provinces, the Forest Department has taken

over the canal Plantations with beneficial results. At first the Forest Department merely planned and the P. W. D. establishment attempted to follow the advice given ; but results of this dual management were not very satisfactory and eventually the Forest Department took complete charge. The division of the revenue resulting from these operations was settled after much discussion. After all expenses have been paid, the P. W. D. are credited with two-thirds and the Forest Department with the remainder of the surplus. At present the Forest Department has not sufficient trained staff to take over the tree production on the whole of the P. W. D. estate but it should be possible within 3-4 years for working schemes to be drafted by Forest Officers for each canal system which the P. W. D. (with a slight increase of subordinate staff) can follow. Eventually these areas should be declared Reserved Forest and be managed by the Forest Department.

45. Roadside avenues throughout the Province must be established as soon as possible. On the main roads the working scheme outlined in para. 17 should be followed ; on the minor roads Babul should be raised. Whenever new roads or the improvement of old tracks are being planned the provision of ditches for irrigating the roadside trees should be included in the plans. Even where canal irrigation is not available much can be done. For instance on the Karachi—Kotri highway there is no canal water except in the vicinity of Tatta ; but from Karachi to Ghara, the Haleji waters might be tapped during the abkalan when surplus water is available, and elsewhere deep ditches on either side of the road will probably collect enough rain water to sustain drought resisting trees such as the mosquito especially if pits are dug in the ditches wherever the trees are put in. Eventually the Forest Department should manage all the trees along the roads whether the latter are in-charge of the P. W. D., Local Boards or Municipalities to ensure proper silvicultural treatment, protection, etc., and these road areas should be declared Reserved or Protected Forest. If energetic action is taken, it should be possible for existing road system to be planted up within 5 years or so by which time the Forest Department staff should have expanded and be able to take over roadside avenue maintenance.

46. Around many Rest Houses in Sind there are large compounds and water for irrigation is usually available ; but little is done to use this land and water properly. Fruit trees are frequently planted when the Bungalow is built but owing to the ignorance of the mallis and general lack of interest they seldom have proper treatment and are only partially productive. Considerable expenditure is incurred on these gardens, but all there is to show for the money (in most compounds) is a few trees, some neat hedges and perhaps some not particularly attractive flowers. These lands could easily become of value without losing any aesthetic effect if part of the areas were made into nurseries for the raising of the trees required for orchards and for the roadside avenues. Two-three Horticulturists should be appointed as soon as possible who should tour regularly. They should revise the lay-out of the gardens where necessary and draw up definite schemes for their development. Instructions for the tending of the trees, vegetables, flowers, etc., should be written down and one copy be given to the local Sub-Divisional Officer and another kept in

the Bungalow available for visiting officials, Garden accounts should be maintained and inspected regularly and within a very short time these small area could be made productive.

47. The importance of parks in towns and "Green Belts" around urban areas is well known and Government should request Local Authorities to earmark areas for these purposes before land values become too great.

48. In order to stimulate interest in tree-growing "Tree day," which has been observed for the past two years, should continue. As yet there has not been sufficient propaganda to make the day a real success, but if efforts are continued—especially in the schools—this annual event may become a valuable means of making the Sind Public "tree conscious."

49. Some lectures on Forestry and the value of tree growth should be included in the Syllabus at the Agricultural College at Sakrand. These could be delivered by the Divisional Forest Officer, Nawabshah, and he and the Range Forest Officers at Sakrand could show the students forest works in the nearby Pai and Mari forests. Similarly the Tapedars Training Course should include a little general forestry. The Divisional Forest Officer, Hyderabad, could give the lectures, and Miani and other forests are within easy reach for practical demonstrations.

50. The Inspector-General of Forest to the Government of India is always prepared to visit Provinces to give advice, etc., if invited. Such visits are of great value not only to the Forest Officials but also to Government as a printed report of the observations made during the tour is always sent after the visit. It is suggested that the Inspector-General should be invited to visit Sind at regular interval of 3 years.

PART IV.

Staff, etc.

51. The gazetted staff of the Forest Department is now 11 as under :—

- 1 Conservator of Forests.
- 6 Territorial Divisional Forest Officers.
- 1 Working Plan Divisional Forest Officer.
- 1 Silvicultural Divisional Forest Officer.
- 1 Utilization Divisional Forest Officer.
- 1 Sub-Divisional Forest Officer.

It is estimated that the additional staff required as soon as possible to start the works recommended above is 11 :—

- 1 Conservator of Forests Development.
- 1 Territorial Divisional Forest Officer (the existing Sukkur and Shikarpur Divisions must be divided into three divisional charges).
- 1 Thar Parkar Divisional Forest Officer.
- 8 Sub-Divisional Forest Officers (one for each of the territorial and Thar Parkar Divisions).

The Senior Conservator of Forests will act as Adviser to Government and also control all the operations of the territorial divisions. The Development Conservator of Forests will control the work of the Divisional Forest Officers for Working Plans, Silviculture, Utilization and Thar Parkar and supervise the anti-erosion operations in the hills.

The Sub-Divisional Forest Officers attached to each territorial division will be chiefly occupied during the next few years in collecting data for plans for the expansion and development of the riverain forest areas, preparing working schemes for the afforestation of the P. W. D. and other Government owned estate and in assisting to raise Roadside Avenue throughout the Province.

If the developments proposed are to be carried out the first step will be the immediate appointment of a Conservator of Forests Development who will prepare detailed schemes and gradually accumulate the staff required for their executive. It is utterly impossible for one Conservator to administer the Department and also make the necessary inspections carefully, and go into details in connection with these Developments.

52. Including replacement of officers (due to retirements, etc.) Sind must recruit some 12 Gazetted Officers by about 1951-52. At present under training at Dehra Dun there is one Officer candidate and during the next 5 years it is hoped Sind will be allotted one seat yearly at the Superior Service training course. Six Officers, therefore, can probably be obtained by direct Dehra Dun trained recruitment; the balance will have to be found by promotion of Range Forest Officers from the existing cadre.

53. Between 1950 and 1960 a further expansion of gazetted staff will be required to cope with the increased areas under irrigated plantations and other works. One additional Conservator and eight or ten Divisional Forest Officers will certainly be the minimum number necessary, and, of course, provision will also have to be made for normal wastage and replacement. Probably the work of the Department will have expanded to such an extent by about 1950 that a Chief Conservator will be necessary to act as Adviser to Government, co-ordinate Forest Department activities with that of the other Departments concerned and draw up plans for further developments.

54. The sanctioned cadre of the Range Forest Officers is 26. There are now 19 trained Rangers serving, one surveyor and two foresters acting as Rangers whilst two candidates are under training at the Rangers College at Dehra Dun.

55. The Ranger Cadre will have to be doubled as soon as possible and a further steady increase will be necessary up to about 1960. Including wastage due to promotions, etc., it is estimated Sind will require about 35 new Rangers within the next few years. It is hoped that Sind will be allotted 4 seats yearly at the Rangers College and within six years, therefore, 24 direct Dehra Dun trained recruits will be available for service. The remaining number required will have to be obtained by promotion.

56. Government approved recently of the creation of some new posts of Deputy Rangers. These will be filled by men who have similar qualifications to those required for admission to Rangers Training College but for whom,

vacancies cannot be found. These men will be posted to serve under senior and experienced Rangers and will gradually learn forestry business so that in a few years they may be capable of managing a Range and be promoted to the Ranger Cadre.

57. In the past the subordinate staff has been recruited largely from the Maldars and villagers living near the forests and most of these men have been illiterate. They have never had any proper training but gradually by experience learnt their work of protection and simple silviculture. Operations are now becoming more complicated with the introduction of agri-silviculture, etc., and literate men must be recruited and given some proper training.

In the past a starting pay of Rs. 14 or 15 for a Forest Guard was not unreasonable, but if a better type of man is to be obtained minimum rates of pay will have to be raised. At present a coolie working half a month can make more than a forest guard receives for a whole month and, in consequence, only the lazy and feckless are coming forward to fill guard vacancies, and the quality of the staff is deteriorating. As some 300-400 new recruits will be required in the next few years the question of pay and prospects should have attention in the near future.

58. To train the subordinate staff a Forestry Training Course must be started as soon as possible. Probably three-four months training will be ample and the course can be conducted by Range Forest Officer with perhaps a few additional lectures by specialists such as the Divisional Forest Officer, Silviculture. A suitable place for the course would be either Sakrand, where there are good forests in the vicinity including Pai which is being converted into an Irrigated Plantation, or near Miani where there are experimental gardens, etc. Perhaps Sakrand would be the most suitable as the Officers at the King George V Agriculture College might be able to help in general training by giving simple talks about agriculture and its development. It should be possible for the Development Conservator of Forests to put up a detailed scheme for subordinate training within a year or so. The training course in Horticulture at Mirpurkhas, where several forest guards are now working, should be continued because the forest area under orchards will rapidly increase as Irrigated Plantations are created.

59. The clerical staff of the Department will have to expand as rapidly as the field staff. At present, as the prospects in this Department are much worse than in many other Government Departments only the poorest type of clerk wishes to join and even these recruits, during their first few years service, spend much of their time trying to get transfers to other Departments. The clerical starting pay is extremely low (much less than the monthly earnings of a daily labourer) whilst it is many years before a clerk can reach a time scale pay on which he can live in comparative comfort and begin to consider saving. So hard is the struggle for existence that many of the clerks are worn out before they are 35 and it is difficult to find men suitable for the senior posts of Head Clerk, etc. The pay of the clerical establishment must have attention soon, or the service in this (and other) Departments will be in danger of a break-down.

60. The present system of clerical training gives most unsatisfactory results. The recruit is posted to an office and gradually acquires knowledge of his work; but it is often years before he is really earning his keep and,

if useless, his services are not normally dispensed with until he has failed thrice in the Departmental examination. In order to improve the quality of the clerical establishment it might be advisable, therefore, to have a training course for the clerks. At the end of say 3 months or so, examinations could be held which would weed out the hopeless and incompetent. Government would have to pay the men under training some maintenance allowance but the total cost could not be much.

61. For the past few years the general standard of recruits for the Gazetted, Ranger and subordinate posts of the Forest Department has not been good, and to ensure an efficient service, it appears essential to permit recruitment from the whole of India rather than from Sind only. It will be a waste of money to embark on the enormous expansion of activities suggested in this Note, if a competent service cannot be maintained. It might also be advantageous to continue some recruitment of Europeans as, though the Dehra Dun training is excellent, the Indian Forest Officer does not seem to have such a broad view of his profession as the European trained Officer. He is often inclined to attach too much importance to immediate results and forestry is a long term business. Over-keenness to show, for instance, increased revenue may eventually have serious effects on the general productivity of the estate.

62. Finally—the housing of the forest staff is, generally speaking, deplorable. In the past, because the forests have been considered solely as a source of revenue, any expenditure for amenity provisions for the staff has been reduced to the lowest possible figure, and quarters (and offices) have had to be of “katcha” construction which soon becomes “tumble down.” There is no reason why most of the Forest Department staff should not be as well housed as the staff of P. W. D. and early action is required. A housing programme was drawn up in 1940 but little progress has been made because of the War. Housing construction must be re-started on a small scale now, and as soon as possible the effort must be greatly expanded so that within a very few years essential housing is provided.

PART V.

Finance.

63. The cost of the Developments proposed will be great. In the riverain areas over 4 lakhs acres of waste land may be afforested, and though the sale value of such land is small, the total capital value will be considerable. The 40,000 acres of land to be turned into forest near the desert will also have comparatively small capital value but the land required for the 1,50,000 acres of Irrigated Plantations to be established when the new Barrages are functioning, would fetch in the open market not less than 1½ crores of rupees and perhaps more. The cost of irrigation channels to distribute water and other development works will total lakhs of rupees and probably the full capital expenditure required will amount to not less than Rs. 4 crores.

64. Forest earnings, however, have vastly increased and should continue at a very much higher level than in pre-war days, and the bulk of the surpluses should go into a sinking fund to be used for the development of the estate. A proposal is now before Government that one-third of the surplus revenues should be put into the sinking fund ; but it is now suggested that any surplus above Rs. 8 lakhs (which is twice the average pre-war figure) should be put aside for as long as the war lasts, for capital expenditure.

In 1942-43 the surplus was Rs. 11 lakhs, in 1943-44 Rs. 28 lakhs and in 1944-45 should be about Rs. 35 lakhs ; so, if the proposal is accepted, the sinking fund will amount to about rupees half a crore by the end of 1944-45. If this policy is continued, it should be possible during the 25 years or so, it will take to carry out all the proposed developments, to pay for most of the capital costs out of earnings. Whether this can be done or not, the expansion and development of the forests is essential for the well being of the whole Province and must be carried out—whatever the cost.

65. During the next few years the expenditure on establishment and works will gradually rise and by about 1950 will be not less than Rs. 12 lakhs. In the following decade it will almost certainly increase further to perhaps Rs. 20 lakhs.

66. What level the forest revenues will eventually reach, it is impossible to foretell. The Changa Manga Irrigated Plantation in the Punjab was established in about 1866 and soon made good profits after meeting all interest charges on capital and gradually paid off the latter until the estate was free from debt by about 1916. Pre-war, when prices were comparatively low, this plantation was earning about Rs. 16 nett a year an acre. There is no reason why the Sind Irrigated Plantations should not earn annually at least Rs. 8 an acre nett, and as it is proposed to establish over 3 lakh acres of these plantations, a surplus of Rs. 25 lakhs annually should be realised in due course apart from earnings from the other parts of the estate.

NOTE.—[When Cubic feet figures are given, they are for 'stacked' Cubic feet of which 1,000 (a stack) average 250 maunds in weight, and will yield 80 maunds of charcoal.]

- | | | | | |
|----|------------------------------|----|----|---|
| 1. | Serial Number of Scheme | .. | .. | 45. |
| 2. | Name of Scheme. | .. | .. | Development of the edible oysters in Sind. |
| 3. | Brief description of Scheme. | .. | .. | In the past rich beds of Sind became gradually depleted. through indiscriminate exploitation. Subsequent attempts were made to prevent the destruction of immature oysters by introduction of (i) size limit, and (ii) spreading of dead oyster shells (cultch) in beds to collect spat fall. These attempts were not successful because the subject was tackled unsystematically. Now new methods of collecting the spats are to be introduced, and spats will be collected at Ibrahim Hyderi Oyster Park and then transplanted to other beds. Extensive cultural operations will be undertaken in all other beds along the whole coast of Sind. These oysters are renowned as excellent in India. |

4. Area selected for application, if applicable.. The coast of Sind.
5. Time expected to be taken for execution .. Scheme will mature fully three years hence from now.
6. Brief details of staff required and how staff is proposed to be obtained.—

(a) *Upper staff for planning*
Fisheries Expert (already available)

(b) *Upper staff for execution.*

(i) One Assistant Superintendent

(ii) One Clerk

(iii) One Supervisor.

} in conjunction with scheme
No. 46, Prawn Scheme.

(c) *Lower staff.*

(i) One Tindal.

(ii) Two Lascar.

(iii) One Peon.

7. Rough estimate of cost at the existing rates :—

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Capital	..	4,050	Nil.	Nil.	Nil.	4,050
Staff and allowances	..	3,500	3,600	3,800	3,900	18,500
Contingencies	..	1,000	1,000	1,000	1,000	5,000
	..	8,550	4,600	4,800	4,900	27,550
Total Rs...						Total.
8. Extent to which the scheme would be productive :—	1st year.	2nd year.	3rd year.	4th year.	5th year.	
Receipts .. Rs.	Nil.	Nil.	3,000	6,000	12,000	21,000

9. Extent to which the scheme will cater for returned service personnel. If any fisher folk have joined the Defence Forces, they can be absorbed in this scheme. The rest if intelligent can undertake oyster farming in other creeks on a commercial scale.

10. General description of plant, equipment and stores: } Nil.

(i) to be imported from abroad

(ii) to be obtained in India

One boat, and small oyster tools, etc.

11. Labour force required in case of the larger scheme.

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.

Nil.

13. Brief indication, where applicable, of further development contemplated on the lines of the scheme in succeeding five year periods.

When the oyster beds are fully resuscitated and the canning of oysters is undertaken on the establishment of a canning factory, it will be possible to use "Oyster Dredge" and other mechanical devices for the collection of oysters.

The scheme has been approved formally under Government Resolution, General Department, No. 3947-G.B.(44), of the 18th December 1944, (copy printed at pages 187—193 post), and has been put into operation.

Any other remarks or information

Development of the Edible-Oyster
Fishery—Sanction—of staff etc.
for the—

GOVERNMENT OF SIND.

GENERAL DEPARTMENT.

Resolution, No. 3947-G.B./44.

Sind Secretariat, Karachi, 18th December 1944.

Letter No. F.-33/1, dated 8th December 1944, from the Fisheries Expert (Dr. M. R. Naidu)—

"I enclose herewith for favour of obtaining the sanction of the Government of Sind, a scheme for the development of the Edible-Oyster Fishery in the Province. I feel confident that if the scheme is worked successfully it will be possible to market the resultant oysters after two years. This year will be utilised for gathering the scientific data required, starting some cultching operations in a few oyster beds and in establishing the proposed "Oyster Farm" at Ibrahim Hyderi.

If Government should approve my scheme and accord early sanction it seems advisable to auction the oyster fishery this season on the usual conditions with an extra condition that half the collection of oysters in sound condition should be surrendered to the Fisheries Assistant who will accompany the oyster collection party of the lessee every time.

These separately culled oysters may in the first instant be utilised for starting the oyster farm at Ibrahim Hyderi and from next year onwards transplanted to various suitable centres. Otherwise Government may have to spend money to cull these oysters for transplantation and the localities where the surviving oyster beds are situated are not easy to be detected.

If the Director of Industries approves of this, I will hold an auction sale after the intimation to the usual lessees. As only half of the oysters will be available for the lessee the rental may be only half of what we may normally expect."

Letter No. F./33, dated the 11th December 1944, from the Director of Industries, Sind.

"I enclosed a letter from Fisheries Expert. It is necessary to start the Oyster farm within 15 days if any work is to be done this year. If we do nothing till 1st January, the work can be started only next December. Though the work is in the nature of an experiment, the Fisheries Expert hopes to work the scheme successfully. If one lakh oysters are exploited every year, the scheme will involve no loss to Government.

An Assistant Superintendent, a clerk and a peon asked for by the Fisheries Expert are not provided in the enclosed budget. The work can be done without a special Assistant Superintendent this year. It will be necessary to appoint one next year and give him a clerk and a peon. Such an Assistant can be appointed when a scheme for exploitation of prawns is also put into operation. Maintenance of a special boat is essential for the Oyster scheme. It is equally necessary to put up a semi-pakka building for the

Supervisor at Ibrahim Hyderi. The oysters will be marketed through the Department from next year. I am leasing the oysters beds this year on conditions mentioned by the Fisheries Expert. The scheme will run for five years in the first instance. Government orders sanctioning the scheme may please be obtained before 20th December."

RESOLUTION.—With a view to develop the Edible-Oyster Fishery in the Province and to market the resultant Oyster after two years, Government are pleased to sanction as an experimental measure for 5 years with effect from 20th December 1944, a scheme contained in the accompaniment to this resolution. The details of staff, expenditure and income in connection with this scheme are shown below:—

Non-Recurring.—		Rs.
1. Combined residence and office of the Supervisor ..		1,000
2. One medium size boat with sails and one 'tony' ..		1,200
3. Buckets, wooden tubs, hatchets, shovels, lanterns, wire brushes, etc.		500
4. Laboratory apparatus:—		
Chlorine Titration apparatus.	}	1,000
P.H. Value determination apparatus		
Hydrometer set		
Thermometer, etc.		
5. Furniture:—		
1 table.	}	350
2 Chairs.		
2 Stools.		
2 Racks.		
1 Cupboard		
Total Rs.		4,050

Recurring.—

Staff.—

Supervisor—50—5/2—70.

Tindal 25—1—40.

2 Lascars at Rs. 20.

Dearness allowance and other allowances admissible under rules.

Contingencies.—

	Rs.
Cultching, Bamboo mats, tiles, stones, poles, ropes, etc. ..	500
Cooly charges and hiring of extra boats if needed ..	300
Advertisements charges and miscellaneous ..	200
Total Rs. ..	1,000

RECEIPTS.

	Rs.
1st two years	Nil.
Third year, it is expected to market 50,000 oysters at Rs. 6 per 100 (present rate is Rs. 12/8/- a hundred)	3,000
Fourth year onwards it is expected to market 1 lakh oysters..	6,000

In 1897-98 as many as 2,00,000 oysters were collected on the Sind coasts. The beds have since become exhausted. This scheme is one of regeneration. It should be possible to exploit 2,00,000 oysters every year from the 5th year of the scheme. For purposes of calculation a more conservative estimate of 1 lakh oysters has been adopted.

2. The receipts realised from the auction of the "Oyster etc. may be credited to Government account under the Major head XXXII—Industries."

3. The Director should point out in due course the source from which extra cost on this account will be met during the current year.

By order of the Governor of Sind,
ALLAH BAKHSH, A. ANSARI,
Secretary to Government.

To,
The Director of Industries, Sind.
The Finance Department (consulted).
The Comptroller, Sind (through the Finance Department).

Accompaniment to the Government Resolution No. 3947, G.B.(44), dated
18th December 1944.

"A Scheme for the development of the Edible-Oyster Fishery of the Sind, Coast.

The edible oysters of Sind have established a reputation as the best in India owing to their fair marketable size, richness, palatability and above all to their absolute freedom from any bacteriological contamination. The still persistent and clamorous demand from all the high class hotels even in Calcutta for the "Karachi Oysters" during my tenure of office in Bengal in 1937-39 as their Fisheries Expert, in spite of my procurement for them of the best oysters from the Madras Government Oyster Park is an ample testimony of the superior quality of the Sind Oysters over those from other parts of India, and of the need for extensive cultural operations in this region.

In the past there were extensive natural oyster beds in the following creeks and localities on the sea beach:—

1. Miani.
2. Maripur.
3. Kurangi (near Ibrahim Hyderi).
4. Phiti.
5. Khudi.

6. Khai.
7. Khanto.
8. Patiani.
9. Dubo.
10. Chaan.
11. Khobar.

These rich beds through indiscriminate exploitation became gradually depleted.

Subsequent attempts made to prevent the destruction of immature oysters by the introduction of a size limit *e.g.*, prohibition to fish oysters of sizes below 2 inches and above 6 inches, as one of the clauses in the lease agreement and another clause insisting on carrying back to the beds the dead oyster shells to provide cultch for the attachment of the young spat, have obviously not brought about the desired beneficial results. The former perhaps due to want of strict control, and the latter probably because the method of cultching was unscientific. I suspect extensive poaching as well.

It is true that in the latter years in the past a lot of cultch in the shape of dead oyster shells and coarse stone boulders was provided. But these have not been effective as this was evidently done without due consideration to the life history of the oysters.

The Indian oysters thrive well in areas of comparatively lower salinity and where these are partially exposed for a few hours on some days in the month at low tides and below the low tide level and the bed is firm with the hard substratum for the spats to attach themselves. There should be abundant plankton food chiefly *Diatoms*. There should not be too much suspended sediment in the water, otherwise the oysters are smothered to death.

There is a definite zonation in the oyster beds. A top zone a foot or so deep just above the low-tide level, the medium zone below the low-tide level and the bottom zone well below it. Among the three zones, those on the top zone are smaller in size but the spat-fall is highest and the mortality in the spat is also high. In the medium zone the oysters are of medium size, but the spat-fall is less than in the top one and the mortality fewer. In the bottom zone the oysters are the biggest, spat-fall scarcely any and the percentage of mortality least.

Therefore cultching must be done at the first or the second zone and after a few months transplanted to the bottom zone for the rapid growth.

As the free swimming larvæ of the oysters settle down after a week or so and attach themselves by their left valve to only clean surfaces of the cultch, the cultching should be done at the maximum spawning season (period) as otherwise the cultch gather coating of slime (silt) or algal growth, the spats die without getting attached and the money and the effort spent on cultching are wasted.

The common saying that oysters are out of season and should not be eaten in months in the names of which there is no "R" *i.e.*, May, June, July and August holds good only in the case of the European Oysters as this is

their breeding season and they are lean and not fit for human consumption. But in the case of the Indian Oysters the season is different starting from about November to August. Oysters in Madras East coast are actually in finest condition in June and July.

While the European oysters (*Ostrea edulis*) thrive and breed in high salinity 24 to 45 o/oo, the Indian oyster's—the Madras oyster's (*Ostrea Arachanensis*)—range of optimum salinity is low, 8.42 o/oo to 24.99 o/o with the specific gravity from 1. to 1.020, much below the salinity of the sea water beyond, and hence the Indian oysters thrive well in the vicinity of the river mouths. While European oysters breed during May to August, the Indian oysters breed practically throughout the year, but the heavy spat fall occurs during 4 to 6 months in the year.

Extremes of the salinity and temperature are fatal to the Indian oysters.

From my inquiries and observations I note that the Oysters are now found only in the following creeks:—

1. Kurangi.
2. Phiti.
3. Patiani.
4. Khudi.
5. Dabo.

Khober creek being far from Karachi is seldom worked by the lessee. Those near Ibrahim Hyderi are mostly small ones, 1 inch to 2 inches at the top zone and two inches to 3-1/2 inches in the deeper places. The latter are quite in the prime condition, plump and creamy. I reckon they are two year old ones, the size at which the Indian oysters attain the marketable size.

For the rehabilitation of the depleted natural beds and for extending the oyster beds areas for which there is still ample scope here, three things are essential:—

(1) Extensive cultching operations by way of providing cultch in all the suitable commercially recognised methods 'Japanese' and European-cultch in suspension, on floating rafts, in submerged platforms, on bamboo mats spread out on beds, which are soft and on stone bolders, etc.

(2) Scientific-research to determine the optimum range of salinity the value and temperature, the spawning season and the optimum range of productivity or spat fall so as to provide cultch only at the maximum period of productivity and collect as many spats as are available, work out the best method of transport, with or without shells—as the "mother liquor" or the juice found in the oysters when opened fresh is specially relished along with the flesh and is a known appetiser, and as this can be retained only when oysters can be successfully transported and served with shells—if the former the maximum number of the days they can be kept alive during transit with and without ice, the size and the age at which the Sind oysters attain their maturity for the first time, the maximum age of Sind oysters, occasional bacteriological tests to see if there is any contamination deleterious to health, and ultimately canning of oysters and, etc.

(3) Establishment of an "oyster farm or park" at a suitable place, say Ibrahim Hyderi so as to enable the Fisheries Assistant in charge to conduct all the required experiments. In this park oysters for marketing may be stored finally before the sale and this will serve as a "hospital" for cleansing. After 3 or 4 years it may be possible to work the oyster fishery departmentally, on a commercial basis as is done at present by the Madras Government. In Madras annually the opening and closing of the oysters seasons is advertized—this season varies slightly from year to year according to the weather and rain fall conditions—and orders are executed by the officer in charge. The sale price in the year 1930 season was as follows:—

				100 oysters	300 oysters	500 oysters	Remarks.
				Rs.	Rs.	Rs.	
Madras	..	..	..	2 0 0	5 0 0	8 0 0	1. Oysters are packed in wet gunny bags, during transit.
Bangalore	..	..	..	2 8 0	6 4 0	9 12 0	
Octacammand	..	..	..	3 8 0	8 0 0	13 12 0	2. Rates includes packing and freight charges.

The prevailing rates at Madras is Rs. 2/4 a hundred and at other centres the rates are proportionately increased and these rates are by far below the prevailing rates at Karachi. I understand it was Rs. 1/4 per dozen last year. It was Rs. 5 per dozen of Karachi oysters in 1938-39 at Calcutta. It is therefore, possible to sell the oyster from the oyster park here at rates far higher than those prevailing at Madras.

The railway authorities at Madras have granted half parcel rates concessions for the transport of live oysters. A similar arrangement may perhaps be made with railways here also. If our transactions exceed a few lacs every year, which I expect it will be if my scheme is worked successfully, the railways may even grant quarter rate concessions which will expand our oyster trade to a considerable extent and the oyster fishery section should then be able to make a substantial revenue.

One medium sized "Howra" boat and a small "tony" will be required for use of the oyster work. They are to be manned by one mistry who will be the tindal, and two lascars. One supervisor will be incharge of the oyster farm at Ibrahim Hyderi. The whole of this oyster work will be under a Fisheries Assistant who will be incharge of all activities in the "Shell-Fisheries" of the province such as edible oysters, pearl oysters, prawns, crabs and lobsters etc. He should be a zoology graduate with a knowledge of chemistry to do the chlorine titration, Ph. determination etc.

Another scheme for the manufacture of "Semi-dried" prawns and for experiments with improved methods of fishing for augmenting the supply of prawns, is under preparation and this Assistant will be incharge of this work also,

Staff.—

- | | | |
|----|------------------------------|-----------------|
| 1. | One Assistant Superintendent | Rs. 100—10—150. |
| 2. | One Supervisor on .. | Rs. 50—5—80 |
| 3. | One tindal (Mistry). .. | Rs. 30—5/2—50. |
| 4. | Two lascars each on .. | Rs. 19. |
| 5. | One peon .. | Rs. 16. |
| 6. | One clerk for the section on | Rs. 25—5/2—55. |

Cooly labour, paid from the contingencies, will be engaged during the season for the collection and distribution of oysters for sale and for cultching operations as and when required. From the next year onwards one Watchman paid from the contingencies, should be appointed on Rs. 10 per mensem at each of the important centres to prevent poaching.

As the oyster and the prawn fishery seasons have just commenced I recommend that one of the local suitable candidates be selected immediately for the post of the Fisheries Assistant."

1.	Serial No. of Scheme	...	...	Development of Prawn Fisheries.
2.	Name of Scheme	...	...	At present the prawns are boiled and shelled. The product though whole-some is rather hard, crude and difficult for digestion. "Semi-dried" Prawns manufacture—a process perfected by Madras Fisheries Department—would be introduced and the product thus obtained will be whole-some and easy for digestion. Improved methods of fishing such as "Pound-nets" and other stake nets, traps, etc., which have been proved effective will be introduced to exploit the areas and augment the supply of Prawns. Manufacture of "Prawn Paste" and "Prawn Pickling" will also be experimented upon.
3.	Brief description of the Scheme	...	...	Karachi district—Coastal area (mostly Eastern half).
4.	Area selected for application, if applicable...	...	...	Four months during the season every year.
5.	Time expected to be taken for execution	...	...	(a) <i>Upper staff for planning.</i>
6.	Brief details of the staff required and how staff is proposed to be obtained.	...	...	Fisheries Expert (already available).
				(b) <i>Upper staff for execution.</i>
				(i) One Assistant Superintendent } in conjunction with Scheme No. 45. } (Oyster Scheme).
				(ii) One clerk.
				(c) <i>Lower staff.</i>
				One operator.
				Fishing boats with crew engaged on hire to begin with : Later on they will be engaged on permanent basis. The staff will be procured by the normal process of recruitment.

7. Rough estimate of cost at existing rates :—

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Capital	750	3,000	Nil	2,000	2,000	7,750
Staff and allowances	4,041	4,400	4,800	5,200	5,600	24,041
Contingencies	8,115	10,000	10,000	10,000	10,000	48,115
Total Rs.	12,906	17,400	14,800	17,200	17,600	79,906

8. Extent to which the scheme would be productive :—	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Receipts	15,000	30,000	35,000	35,000	40,000	1,55,000

9. Extent to which the scheme will cater for returned service personnel :—

10. General description of Plant, equipment and stores :—

- (i) to be imported from abroad :—
- (ii) to be obtained in India

Canning Plant (*vide* also Scheme No. 52 at page 222 post).
Boats to be made locally—small tools, nets, etc.
Mincing machines, small autoclaves, tin containers, etc.
Fishing boats and crew.

11. Labour force required in the case of the larger schemes.

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.

13. Brief indication, where applicable, of further development contemplated on the lines of the scheme in succeeding five year periods.

14. Any other remarks or information :—

Yes : for obtaining in due course this Canning Plant, tin sheets : rubber rings, etc.

Canning of prawns in brine in glass or china containers, after the canning factory is established.

Canning Expert for the manufacture of the above 'Potted Shrimp' product from America on a short term contract will be a help. There may be some among the American Defence Forces now in India. Enquiries may be made here also.

Note—The Scheme has been formally approved under G. R., G. D., No. 3937-G. B. (45) dated the 30th January 1945, (copy printed at pages 196—201 post).

Prawn Fishery in Sind:—

Development of a Scheme for the—

GOVERNMENT OF SIND.

GENERAL DEPARTMENT.

Resolution No. 3973-G.B./45.

Sind Secretariat, Karachi, 30th January 1945.

—o—

Letter No. F.-37/2, dated the 28th December 1944, from the Fisheries Expert in Sind:—

"I enclose herewith a scheme for semi-dried prawns for favour of sanction."

Among the marine fisheries, prawn fisheries form one of the most dominant fisheries of this coast. In this respect there is a marked similarity in the character of the fisheries of the other deltaic regions, *e.g.*, the Kistna, the Godavari, the Ganges and the estuaries of other river mouths on the West Coast of India. As in the case all the world over, prawn fisheries are seasonal in nature here also.

The prawns constituting the prawn fisheries in all the above areas belong to a big marine group of prawns known as "*Penæidæ*" which are all normally inhabitants of the sea but migrate annually into estuaries of lower salinity at specific periods in quest of their food which is predominately Diatomaceous in character. The eastern half of the Gangetic delta "the sunder buns" yield annually several lacs worth of prawns.

The prawn fisheries of Sind comprise the following three kinds arranged in the order of their sizes:—

- | | |
|-------------------------------|-------------|
| (1) "Jhairi" the biggest | 5"—9" long. |
| (2) "Kaliri" the medium sized | 4"—6". |
| (3) "Kiddi" smaller sized | 2"—4". |

There is, besides, another small sized group of shrimps known locally as "Khisieu" the smallest $1\frac{1}{2}$ —3", which is from the fresh water areas of the delta. Of the above No. 3 "Kiddi" yields the biggest quantity on account of its richness in fat and flavour and appetising attractive scarlet colouration when cured.

The prawn fishing season is from about the end of November to March known locally as "Chara."

The prawn fishery centres are the following:—

- (1) Kurangi creek (near Ibrahim Hyderi).
- (2) Phiti.
- (3) Khudi.
- (4) Patiani.
- (5) Dabbo.
- (6) Chhan.

Of the above numbers 2, 4 and 5 are the most important centres. All the above centres are in the Western half of the Indus delta which has become gradually more saline as a result of the river's course tending to move eastwards.

Barring a small quantity say 10 per cent. of the total catch of approximately 32,000 maunds of the prawns in the Province which is consumed fresh practically all the above quantity is cured in the following way and most of it exported to Ceylon and in pre-war days to Singapur and Rangoon also. These latter markets are now closed to the trade.

In the indigenous method of prawn curing, the prawns are boiled hard with some quantity of sea water in big copper vessels or iron open drums, for varying periods—20 minutes to half an hour according to the kind, sundried for one to three days, shelled, by beating with the stick completely for what is locally called "Rangoony" variety or only partially shelled for the other two varieties known locally as 2nd or "imitation" and the 3rd variety "Gaam-Chalu" or "Chalita" (meaning ordinary). The last variety is dried only for one day and very crudely shelled.

The wholesale price of the 1st quality of the dried prawns last year was as much as Rs. 30—40 per maund of 40 seers and those of the other varieties Rs. 20—30.

As there is now no market for the "Rangooni" variety only the other varieties are now being prepared and the ruling price per maund of dried prawns "Kiddi" is Rs. 40 to 45. The price of the fresh prawns at the prawn fishery centres during the last season was Rs. 2/8/- per unit basket, locally known as "maap", of say about half a maund weight, *i.e.*, one anna per pound of fresh prawns. Roughly a maund weight of fresh prawns will yield one third of incompletely shelled dried prawns.

The indigenous product though wholesome on the whole is rather hard, crude and difficult to digest and caters at present only to certain class of people. But if it is prepared as "semi-dried" prawns—a process perfected by the department of Industries, Madras,—the resultant product retains to a greater extent the qualities and palatability of fresh prawns. It has only to be soaked in hot water for a few minutes to get rid of the excess of salt and the semi-dried prawn is as good as the fresh one, and can be made into any menu just like fresh prawn; only there will be probably no need to add any salt.

MANUFACTURE OF SEMI-DRIED PRAWNS.

In this process absolutely fresh prawns are taken, boiled in a boiling vat, shelled, the flesh put in the brine for a few minutes and sun-dried for a few hours to get to a sort of rubber consistency. A sample prepared as an experiment during my last tour to Shah Bunder,—this has however not come up to the standard as it was done in a hurry and was kept exposed to moisture in the night,—is sent herewith for favour of inspection.

The most important prawn fishery centre is Patiani and I propose to have a temporary shed put up for the manufacture of "Semi-dried" prawns for this season—December to March and to carry out the experiments with improved methods of fishing for prawns such as Stake-nets, Pound-nets, Prawn-traps etc. which have been found very effective in the Colair Lake and back waters of South Malabar in the Madras Presidency.

The semi-dried prawns being still moist can keep good ordinarily for a few weeks sufficient for transportation to most parts of India, packed in paper packets or in wooven bamboo baskets with a butter paper lining and tied with coir strings. But if it is stored in four gallon tins or drums with a small quantity of Carbondioxide (CO_2) it will keep good for about six months.

The "semi-dried" prawns can also be canned loose in double lacquered tins or made into prawn paste with condiments and canned in small tins as was done in the Madras Government Canning Factory. The prawn paste was considered a great delicacy and was much in demand by the public.

Prawns can also be packed in brine in glass tumblers with a tin lid; this is popularly known as "potted-Shrimps."

For all these items of manufacture we require a proper canning factory consisting of the following main units:—

- (1) One vertical boiler of say 10 horse power.
- (2) One guillotine machine for cutting tin sheets.
- (3) One power stamping machine with different kinds of dies in duplicate, e.g., rectangular (big and small), circular (big and small) and oval.
- (4) One trimming machine.
- (5) One rubber ring fixing machine.
- (6) Two double seaming machines for both circular and rectangular tins.
- (7) One steam testing vat.
- (8) One processing steam retort with pressure gauge, valve etc. complete

The canning factory besides canning prawns, can also can the following fish available in Sind, in slices, packed in oil, curried or marinated or in tomato sauce:—

- (1) The Indian salmon "Rawas".
- (2) Seer, "Surmai"
- (3) Pomfret "Pittho" or "Halva" or "Pauplet".
- (4) Perch or Cock-up "Dangri".
- (5) Perch or Jew Fish "Ghol".

Pending the establishment of a Government Canning Factory the manufacture of "Semi-dried" Prawns can be undertaken forthwith from Patiani centre with a temporary shed put up for the purpose till March next, where the prawns will be bought from local fishermen and cured. Most of the fishermen even here I am informed have taken advances from one or other of the few capitalists and they are therefore bound to deliver their catches to their agents who go there during the season for curing. There are however, a few fishermen who are not so indebted and from these we may expect to buy fresh prawns and we may have to pay a little more than the local buyers. There are invariably a small quantities of small sized miscellaneous fish among the prawn catch which will have to be separated, so the cost price of fresh prawns may work out to Rs. 7 per maund.

I propose to conduct experiments with improved methods of fishing. For this the local fishermen will like to try them on the basis of share system

of half to half or $\frac{1}{3}$ and $\frac{2}{3}$. If this is not feasible we may have to hire a fishery boat for conducting the experiments and pay the hire of Rs. 70 to 150 for a "Howra" type fishing boat.

About 50 stout wooden posts may be necessary for the experiments. Catches from these will also be utilized for the manufacture of Semi-dried prawns. One boiling vat, half a dozen wire Grills, a few baskets, tubs for water and brinning, Drying Bamboo mats and stacks, fire wood, etc. etc., will be required.

To a certain extent this product will meet the existing food shortage among the civilians and defense forces. A sample may be sent to the Naval and Military Head Quarters for test.

If the Government are pleased to sanction the scheme and the Fisheries Assistant and other staff, asked for in the Edible Oysters Scheme, he can attend to the manufacture of the Semi-dried prawns as detailed above and conduct experiments on improved methods of fishing and on the manufacture of Prawn paste and pickled Prawns provided double lacquered Tin containers are available now. There is in stock a mincing machine and a small processing autoclave for the small number of tins packed for experiments.'

RESOLUTION.—Sanction is accorded as an experimental measure during the current season, to the Scheme for the development of Prawn Fishery in Sind, at the following estimated expenditure and receipts ;—

EXPENDITURE.

<i>Non-Recurring Expenditure.</i> —						Rs.	Rs.
A cutcha shed at Patiani—the prawn fishing centre.						500	
(As Patiani is only a temporary fishing centre only a Catcha shed will be necessary).							
Three Copper or galvanized iron vessels for cooking prawns.						100	
Three Buckets, two kerosene lamps; etc. ...						50	
Unforeseen						100	
Total Non-recurring expenditure							750
<i>Recurring Expenditure on Staff.</i> —							
One Assistant Superintendent of Fisheries on Rs. 100—10—150						1,200	
One Clerk on Rs. 25—5/2—55 Initial pay Rs. 35						420	
One operator consolidated pay at Rs. 50 50×4 per mensem for 4 months. ...						200	
One Peon on Rs. 16 per month						192	
							2,012

(Note :—Posts of Assistant Superintendent, Clerk and peons are in conjunction with scheme for edible oysters, sanctioned *vide* Government Resolution, General Department, No. 3047-G.B./44, dated 18th December 1944. He will be, as stated before, in complete charge of the "Shell-Fisheries" of this Province.

Allowances and Honoraria.—

Rs.

Dearness Allowance to (i) Assistant Superintendent,
(ii) Clerk, (iii) Operator and (iv) peon.—

$$15 \times 12 = 180$$

$$2 \times 14 \times 12 = 336$$

$$11 \times 12 = 132$$

$$648$$

Rs. 648

Karachi Local allowances etc. to Assistant Superintendent, Clerk, and Peon. 380

Travelling Allowance ordinary to the Assistant Superintendent Fisheries for inspection etc. 100

Rs. 1,128

Contingencies.—

Fire wood for cooking prawns 200 maunds at Re. 1 per maund, 200

Duty free white Salt for Salting "Semi-dried prawns" 160 maunds at As. -/5/- per maund. 160×5 50

$$16$$

Transport charges for salt, "Semi-dried" prawns, materials for cutcha sheds, boiling vats etc. 300

80 gunny bags empty each at As. -/13/- $13 \times 80 = 65$ 65

$$16$$

Purchase of fresh prawns (daily 10 maunds will be bought for 90 days i.e. 900 maunds during the season). Each maund at Rs. 7, $900 \times 7 =$ 6,300

Coolies charges for digging pits for vessels, hire of boats, nets, cooking prawns, shelling and salting etc. 600

Purchase of butter paper, bamboo, baskets, grills, coir, etc., for packing the Semi-dried prawns. 600

Rs. 8,115

Total Recurring Rs. 11,255

Receipts.—

Sale-proceeds from 260 maunds of "Semi-dried" prawns at the rate of Rs. 1/8/- per seer or Rs. 60 per maund $260 \times 60 =$.. Rs. 15,600

N.B.—(Local cured prawns are sold at Rs. 1 to 1, 4/- per seer or Rs. 40—50 per maunds).

(The ratio of fresh prawns to "Semi-dried" prawns is 7 : 2 i.e. 7 seers of prawns fresh, will give only 2 seers of finished "Semi-dried" prawns).

Sale proceeds from the prawns shells of 12 maund at	360
the rate of Rs. 3 per maund 120×3	
	<u>15,960</u>

Total Receipts Rs. 15,960 say Rs. 15,900

2. The receipts realised from the sale of the prawns should be credited to Government account under the major Head "XXXII—Industries."

3. The Director should point out the source from which extra cost on this account will be met during the current year.

By order of the Governor of Sind.

ALLAH BAKHSH A. ANSARI,
Secretary to Government.

To

The Director of Industries, Sind.
The Finance Department (consulted).
The Comptroller, Sind (through the Finance Department).

47

1. Serial No. of Scheme Scheme for the manufacture of "Fish Guano" and "Fish Meal."
2. Name of Scheme The general practice now is that the fishermen do not find any use for fish offal, guts, fins and heads cut off during curing, miscellaneous small fish like silver bellies, etc. This waste could easily be converted into "fish guano" and then "fish meal". Some of these are sold at very cheap rates to a local firm for conversion into manure. This scheme aims at demonstration of these products as Cottage Industry.
3. Brief description of scheme. Sind coast.
Three to four weeks after the Government sanction, provided the Government have sanctioned the building of Fish Curing Yards.
4. Areas selected for application, if applicable.
5. Time expected to be taken for execution

6. Brief details of the staff required and how staff is proposed to be obtained :—

(a) *Upper staff for planning* :—
Fisheries Expert (already available).

(b) *Upper staff for execution* :—

- (i) Assistant Superintendent of Fisheries (already available).
(ii) One Mechanic in charge of Karachi Factory where fish guano will be converted into fish meal.

(c) *Lower staff*.

- Five Operators (one at each centre), Cooly labour as and when required.
The staff will be recruited by the normal process of recruitment.

7. Rough estimates of cost at the existing rates :—

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Capital	9,250	Nil.	500	Nil.	Nil.	9,750
Staff and Allowances	2,300	2,500	2,700	2,900	3,100	13,500
Contingencies	11,200	18,000	20,000	22,000	24,000	95,200
Total Rs.	22,750	20,500	23,200	24,900	27,100	1,18,450

8. Extent to which the scheme will be productive:—
 Receipts Rs. 15,000 Rs. 25,000 Rs. 30,000 Rs. 31,000 Rs. 33,000 Rs. 1,34,000
 Extent to which the scheme will cater for returned service personnel:—
 If there are any fisher folks in the demobilized service personnel, they can take to this industry.
9. General description of plant, equipment and stores:
 (i) to be imported from abroad:— .. Automatic Solvent Plants.
 (ii) to be obtained in India—
 { (i) Disintegrator.
 (ii) 10 H.P. Electric Motor.
 (iii) Guano press.
 (iv) Boiling Vats.
11. Labour force required in the case of the larger schemes Fishing boat Crew.
12. Whether the assistance of the Central Government is likely to be required for obtaining the materials, machinery or technical personnel
 Yes; for the procurement of the above mentioned Steam Plant in due course.
13. Brief indication, where applicable, of further development contemplated on the lines of the scheme in succeeding 5 year periods.
 Erection of the above big plants will be necessary later on. Raw materials can be imported, even from Persian Gulf, Muscat, etc.
14. Any other remarks or information .. "Fish Meal" has a great future. Much propaganda is necessary in the beginning as even in the West its utility has been recognised only after the last World War.

48. Stabilizing the Fishing Industry of the Province of Sind.
 The fishing industry is now fully under the control of a few capitalists who do not give a fair deal to the fishermen. To emancipate these poor illiterate fishermen it is proposed to start a Fishermen's Co-operative Society to which loans will be advanced for the purchase of fishing boats, nets etc., and for the establishment of a Co-operative Store where the provisions, cotton yarn for nets, wood for boats will be made available at reasonable rates and a Co-operative Ware-house, shipping facilities afforded as also for marketing the products. Market value bulletins will be issued periodically to assist the trade.
 First at Ibrahim Hyderi and then at Karachi. Will be extended to the other fishing centres.
 Three months after the Government sanction and will be fully mature after one year.

(a) *Upper Staff for Planning* :—
 Fisheries Expert (already available).

(b) *Upper Staff for Execution* :—
 (i) Marketing Officer (Gazetted). } Marketing officer will be selected by the Public Service Commission, and others by local selection.
 (ii) Investigator.
 (iii) Typist.
 (iv) Clerk.

(c) *Lower Staff* :—
 Two Peons.

7. Rough estimates of cost at the existing rates :—

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Capital	1,400	7,000	7,200	7,300	7,400	1,400
Staff and allowances	6,064	1,000	1,000	1,000	1,000	34,964
Contingencies	1,000	8,000	8,200	8,300	8,400	5,000
Total	8,464	8,000	8,200	8,300	8,400	41,364

Capital
 Staff and allowances
 Contingencies

8. Extent to which the Scheme would be productive:— The Fish Curing Industry will be put on a sound basis and the Industry as a whole, with the labour sustaining it, will prosper. State will ultimately benefit by way of export duties and supply of wholesome food products. Fishing labour will be free men and their social and economic condition will improve.
9. Extent to which the Scheme will cater for returned service personnel:— If there are any fisher folk among the Demobilized Force they will get the benefit of this scheme if they become members of the Co-operative Society.
10. General description of plant, equipment and stores:—
- | | | |
|----------------------------------|----|--|
| (1) To be imported from abroad:— | .. | Power boats and nets. |
| (2) To be obtained in India | .. | Teak wood, cotton yarn, provision etc., ship-building iron, copper and brass material etc. |
11. Labour force required in the case of the larger schemes:— Nil.
12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel. Yes. (i) For getting power boats, nets and master fishermen for demonstration for modern methods of fishing, (e.g.), trawling etc. in due course. (ii) Arranging with Mercantile Marine Department for shipping facilities to Colombo and other foreign ports.
13. Brief indication, where applicable, of further development contemplated on the lines of this scheme in succeeding five year periods:— Nil.
14. Any other remarks or information:—

49. Scheme for the construction of Fish Curing Yards.
 The process of fish curing now practised is unhygienic, with the result that the product is unwholesome. To remedy defects in the method of curing and to ensure the production of wholesome cured fish, fish curing yards are to be erected all along the Karachi coast, where hygienic methods of curing the fish by means of cemented tanks etc. will be introduced and demonstrated to the local fishermen. Duty free clean white salt at cheap rates will be issued for curing the fish and the correct proportion of salt required for proper curing will be insisted upon.
 Cape Manz to Mull village in the Karachi District on the coast; will be extended to other parts of the coast of Sind.
 Six months after the Scheme is sanctioned.

(a) *Upper staff for planning*:—
 Fisheries Expert (already available).

(b) *Upper staff for execution*:—
 (i) Assistant Superintendent of Fisheries (already available).

(ii) Five Yard Officers (for each of the five fish curing yards).
 (c) *Lower Staff*:—
 Ten peons (two for each of the five fish curing yards).

The staff will be recruited by the normal process of recruitment.

7. Rough estimates of cost for 5 years at the existing rates:—

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Capital	62,000	....	2,000	....	2,000	66,000
Staff and allowances	7,700	7,900	8,100	8,200	8,300	40,200
Contingencies.—	31,300	60,000	62,000	62,000	62,000	2,77,300
Total Rs.	1,01,000	67,900	72,100	70,200	72,300	3,83,500

8. Extent to which the scheme would be productive :—

1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
51,250	1,00,000	1,02,000	1,02,000	1,02,000	4,57,250

Receipts :—

9. Extent to which the scheme will cater for returned service personnel :— Some can become ticket holders in these Government Fish Curing Yards.

10. General description of plant, equipment and stores :—

(i) to be imported from abroad :— Nil.

(ii) to be obtained in India :— Cement, wood, bamboo and other building materials.

11. Labour force required in the case of the larger schemes :— Fisher folk.

12. Whether the assistance of the Central Government is likely to be required for obtaining the materials, machinery or technical personnel :— Yes, for the issue of duty free White Salt both in the Government Fish Curing Yards and the Fishing boats.

13. Brief indication, where applicable, of further development contemplated on the lines of the scheme in succeeding 5 year periods :— These Fish Curing Yards will be extended all along the coast and probably in adjoining States if they permit, and later on for fresh water fisheries inland.

14. Any other remarks or information :— Nil.

49.
 Scheme for the construction of Fish Curing Yards.
 The process of fish curing now practised is unhygienic, with the result that

1. Serial number of Scheme .. 50.
2. Name of Scheme .. Deep-Sea Fishing Scheme (Preliminary).
3. Brief description of scheme .. Prolific Marine Fishing area for prime fishes are available in Sind waters and in the sea—North upto Persian Gulf and off Cutch Coast in the South. There is ample scope for use of Trawlers and Drifters as these waters are prolific in nature, and fishing could be done throughout the year. The catch will meet adequately the existing acute food shortage. This is both Demonstrational and for Survey.

Sind Coast.

4. Area selected for application, if applicable
5. Time expected to be taken for execution :—
Three months after the fishing vessel and carriers are ready to operate in the Sea.

6. Brief description of the staff required and how staff is proposed to be obtained :—

- (a) *Upper staff for planning.*
Fisheries Expert (already available).
- (b) *Upper staff for execution :—*
 - (i) Inspector of Fisheries.
 - (ii) Engineer for the Fishing Vessel.
 - (iii) Tindal for the Fishing Vessel.
 - (iv) Two Mechanics for Fish Carriers.
 - (v) Two Tindals for Fish Carriers.
- (c) *Lower staff :—*
 - (i) Six Lascars for Fishing Vessels.
 - (ii) Eight Lascars for two Fish Carriers.

Staff to be obtained by local selection by the normal process of recruitment.

7. Rough estimate of cost at the existing rates :—

	Rs.
(i) Capital	1,27,200
(ii) Recurring	1,10,500 (per annum)

8. Extent to which the scheme would be productive :—
 Receipts Rs. 1,20,000 per annum.
9. Extent to which the scheme will cater for returned service personnel :—
 Some of the demobilized Indian Naval Personnel could be absorbed as Tindal and Lascars.
10. General description of the plant, equipment and stores :—
 (i) to be imported from abroad . . . } Fishing Vessels and Launches could be obtained in India. One Engine to be fitted in fish carrier is to be imported from abroad if the proposal to buy the customs Launch "Freda" is accepted; otherwise all the three Marine Engines and equipment should be imported from abroad.
 (ii) to be obtained in India . . . }
11. Labour force required in the case of the larger schemes :—
 Locally obtained.
12. Whether assistance of the Central Government is likely to be required for obtaining the materials, machinery or technical personnel :—
 Yes 1. to obtain one new Marine Engine of good make.
 2. to help in recruiting a Master Fisherman on short term contract.
13. Brief indication, where applicable, of further development contemplated on the lines of this scheme in succeeding five year periods :—
 If these experiments with fishing vessels prove successful commercially, a Trawler and a Drifter-Cum-Trawler could be operated upon with a number of fish Carriers, and for all this there is a lot of scope. In other words this will be followed up by Scheme No. 51 (printed at page 219 post).
14. Any other remarks or information :—
 Please see the explanatory note (printed at pages 210—218 post).

Explanatory Note relating to Scheme No. 50, regarding Deep Sea Fishing Scheme (Preliminary).

(Vide item No. 14 of Scheme No. 50).

A Scheme for the exploitation of Deep-Sea Fishing off the Sind Coast and the region North of it with modern power-boats and tackle.

Although this province's coast line is only 150 miles, yet the Marine fisheries off this coast are of great magnitude and singularly of prime character to judge even from the present moderate landings of the indigenous primitive crafts and tackle. The big local fishing boats known as "bedi" which are 10-25 tons capacity, operating fleets of varieties of drift nets and gill nets are certainly effective to their capacity—some of which are big enough for installing auxilliary motors and hand winches which will surely increase the range and the region of fishing operations and also augment the catching capacity of the vessel as it will permit of the operation of still bigger nets. In their size and effectiveness they are akin to the big "Ratnagiri" fishing boats of the Bombay coast and are second only to the Chitagong "Bade Balam" fishing boats which operate every year in large numbers at the mouth of the Great Ganges off the "Sunderbuns." The fishing crafts and tackle in other parts of the Indian Coasts are comparatively smaller and more primitive than local Sindhi boats. The primitive "Catmarans" (rafts of logs of wood) in certain parts of the east coast of India are local adaptation to suit the surf beaten coast.

2. The continental shelf bordering the Indus Delta bears a very close similarity to that of the Gangetic Delta in its disposition, character and in its prolific nature of the fisheries in this area. In my report on the investigation for the determination of the causes for the extreme fluctuations in the migration of the oil sardine—*Sardinella longiceps*—off the Malabar coast I have established a definite correlation between the South-West Monsoon rains carrying down the rivers in spate a large volume of water containing plenty of nutrient elements such as nitrates and phosphates washed from the land in the catchment area, the food organisms, and the fisheries themselves in the region where such large rivers discharge their waters. In this Report I also have indicated what is commonly known as the "Marine Cycle of life," going on in this Arabian Sea. Abundance of nutrient elements under other optimum conditions yield swarms of micro-organisms "plankton" containing "*Diatoms*," "*Dinoflagellates*," "*Copepods*" etc., in rapid succession which either directly or indirectly form the food of all fishes. Such favourable conditions presumably seem to prevail in the region of Sind Coast and these evidently account for the favourite fishing ground off the Wari and Seri creeks. As in the "Sunderbans" area, there is here also a "swatch of no ground" with waters of Oceanic characters mixing with waters of lower salinity rich with detritus, all factors conducive to the growth of fish food organisms. Close to and to the East of this "Swatch of no ground" there is an extensive plateau or bank "Kori Great bank" of ten to twenty fathoms depth of about ten thousand square miles in area—the bottom is of mud—and another elongated bank 1350 square miles thirty to forty fathoms depth stretching from off Cape Montz to off Hajamro Creek with bottom of sand and shells mostly, quite a suitable trawling ground.

50. Deep-Sea Fishing Scheme (Preliminary).

1.

Serial number of Scheme
Name of Scheme

3. Trawling experiments with the Bombay Steam Trawler "William Garrick" in 1921-22 off Sind Coast consisting in all of 58 hauls were mostly between 10 to 20 fathoms area, the northern most haul was just south of Cape Montz and the southern most off Hajamro or Keti Bunder ; only a few hauls were made in the region beyond 20 fathoms contour lines and among these, however, are found hauls yielding the highest catch (*i.e.*) over 300 lbs. per hour of trawling. Scanty though the data gathered, yet there are indications that quite a fishable region is to be found in the area referred to above. (*vide* haul Nos. 250—254, 323-24, on pages 94 and 100-101 and particulars on pages 38 of the report enclosed). The trawlable area in the Sind coast, above 20° N. latitude between 10 fathoms and 100 fathoms contour lines is about 13,600 sq. miles. But from the experience of the trawling experiments conducted by Steam Trawler "Lady Goschan" of Madras in both the East and West coasts, by the Steam Trawler "Golden Crown" of Bengal and Steam Trawler "William Garrick" of Bombay, it is evident that only the region of the Continental shelf between 10 to 40 fathoms contour lines is the most productive and therefore the actual practical trawlable area is about 11,000 sq. miles off the Sind coast.

4. There are besides extensive prolific fishing grounds north of Cape Manze up to the Persian Gulf which is said to be not much affected by the South-West Monsoon winds and consequently the sea is said to be much calmer and hence fishable even during the Monsoon months.

5. The results of the experiments of the Steam Trawler "William Garrick" indicate a great concentration of the huge Sea perches, "Gholes", (*Sc. Sciaena*) Seabream and snappers (*Sc. Pristipoma* and *Lutjanus*) ; Sharks *Charcharhinus*, Saw fish—*Pristis*, Hammer heads—*Zygaena* etc., Pomfrets "White-and Black" (*Sc. Stromateus* and *Alectes*) ; Indian Salmon—(*Sc. Polynemus*) ; Leather Jacket (*Sc. Chorinemus*) etc., off the Sind Coast. Most of these fishes are at present being caught in "Drift and gill" nets and long lines.

6. I therefore consider that the most economical and up-to-date method of exploitation by power boats will be of the type of steam or motor Drifter of say 70—80 ft. in length or a Danish Motor Cutter type of say 40—50 ft. in length of 6—8 knots speed, about 25 tons capacity, and about 30—60 H.P. It should be fitted with a steam or motor winch, a rope coiler and rollers for hauling the warps for the operation of drift nets, long-lines, troll-lines which are most effective for SEER fish or Surmai, or to carry on experiments with "Danish Seine" nets or "Ring" nets, all of which are quite suitable for the types of the fish available in the Sind waters.

7. To begin with the fish hold may be insulated with 6" cork insulation walls for the chamber where ice may be used for preservation. Later on small Ammonia Brine freezing plant with small cold store attached may be installed if the experiments prove successful.

8. Besides the above power boats for the actual conduct of deep sea fishing exploitation, as explained above, I recommend the introduction, to begin with, of two fast moving—speed 10-13 knots—fish carriers, with cork insulation chambers to collect the catches of the fishing vessel and even of the existing indigenous fishing crafts from actual fishing grounds far off like Ormara, Pasni, Gwader, or even Muscat on the north and Cutch in the south. These fish carriers will transport the fish expeditiously and thus augment the fresh fish supply of Karachi, interior of this Province and the

fresh fish supply to up-countries. With arrangements for the special insulated fish wagons in the railways, these consignments have greater chances of being distributed to more profitable distant markets like Delhi, Cawnpore, Simla, Dehra Dun, Quetta, Peshawar etc. or even Calcutta.

9. It should certainly be possible to meet to a great extent the fresh fish requirements of the Defence Forces. One Carrier boat may work in the area north of Karachi and the other south of it. At present most of the catches in the above mentioned areas are salt cured and exported to only distant foreign markets mostly outside India, *e.g.*, Ceylon, thus depriving Sind and the neighbouring Indian Provinces of this much needed valuable essential food. Bombay Government have a few power boats as fish carriers and they have definitely augmented the fresh fish supply of the Bombay city.

10. Mr. MacDonald—the ship builders of Karachi—has given the following approximate quotations subject to the confirmation at the time of placing the orders, for the Marine Deisel Engine and motor boat hull fitted with the winch, rope coiler etc. and equipment. The necessary marine engines with the tail shaft, propellar and reducing gear etc., will have to be imported with the help of the Government of India.

1. *Fishing Boat (Launch).—*

	Rs.
60 ft. long, 12 ft. Beam, at Rs. 1,000 per ft. 60 x 1,000 ..	60,000
4 Cylinder D.C. Marine Engine 80 H.P. Speed 7-8 knots, fitted with reducing gear. (At pre-war rates)	16,000
Cork insulation, winch, rope coiler and rope rollers etc. ..	4,000
	<hr/>
	80,000

2. *Fish Carrier Launches.—*

<i>Each</i> 35 ft. long, 9 ft. beam at Rs. 500 per ft. 35 x 500 ..	17,500
Gleinfier Marine engine 60 H.P. straight drive (Pre-war rates).	14,000
Cork insulation and engine installation charges ..	600
	<hr/>
	32,100

SAY .. 32,000

For two launch carriers 64,000

Grand total for the three launches .. 1,44,000

N. B.—Mr. MacDonald expects to deliver the above three launches within four months from the date we deliver the marine engines safe at his ship building yard through the help of the Government of India. He should also be given a permit from the Director of Ship Buildings to purchase Teak wood at Rs. 150 a ton at the control rates.

11. There is at present at Karachi a Customs Launch "FREDA" with the following dimensions and the engine which I understand is for sale :—

"FREDA" Custom's Launch.

Length 60 ft. 12 ft. Beam, Depth 4 ft.

4+4 cylinders, Twin screw, carvil built.

Engine Kelvin Deisel oil Marine Engine.

Depth of the engine room 7 ft. 3 inches.

176 H. P. of the 2 engines.

Tonnage 34.89

Speed 12.5 knots.

Burns high speed deisel oil.

Note.—There are twin engines H.P. of each is 88. This launch was built in 1940.
Original cost was Rs. 48,130.

12. There seems to be an offer of about Rs. 62,000 for this launch from the Port Trust Authorities and the Collector of Customs might possibly consider favourably an offer from the Sind Government of Rs. 65,000 to 68,000 after getting it examined by the Mercantile Marine Officer, or the Port Officer and obtaining his opinion. The twin "Kelwin" engines, each of 88 H.P. which this launch has, are considered to be in a very good condition and practically new. The Customs Authorities consider that owing to certain defects in the construction of the hull—to be precise in the wrong location of the engines in the hull, being too far forward—the launch has become too heavy at the bow with the result it does not ride light at the bow while moving but pitches deep in the sea thus making the launch un-sea worthy. Mr. MacDonald considers that if one of the two engines is removed and installed in another hull and the second one shunted aft, the weightage distribution will make the launch sea worthy. We will then have two motor launches. One fitted with the winch and other fishing equipments will then be useful for deep-sea fishing experiments and the other as fish carrier. Mr. MacDonald roughly estimates the construction of another hull, alterations as referred to above, as follows:—

	Rs.
1. Cost of the hull (for fish carrier) 35 ft. long, 9 ft. beam, at Rs. 500 per ft. 35 × 500	17,500
Engine installation charges with cork insulation etc. (Engine will be one of the twin engines fitted in the Customs Launch "FREDA")	1,000
	<hr/> 18,500
2. Cost of another fish carrier complete with another marine engine to be newly obtained.	32,000

3. Cost of the Customs launch "FREDA"	68,000
Cost of removal of one engine and re-arrangement of another ..	1,200
Cork insulation winch, rope coiler rope rollers etc. ..	4,000
Total for the three launches	<u>1,23,700</u>

If it is possible to buy straight away, from the Customs, this launch "FREDA" it will considerably expedite matters and we may start the work with fleets of drift nets etc. and try the fish-carrier experiments next year. Besides it will be more economical than getting all the three launches anew which will also take time.

If the Government however should decide on buying the Custom launch "FREDA" immediate action should be taken to obtain the opinion of the Port Officer or The Mercantile Marine Officer and a suitable offer made to the Collector of the Customs lest the Port Trust Authorities or any other private party should offer the same and buy it.

It will be a great help if the Government of India can recruit a Master Fisherman, acquainted with the above-mentioned methods of fishing, from among the Naval Personnel on a short term contract. It would certainly be possible then to train the local crew in these methods in a short time say 6 months.

Statements of estimated expenditure and receipts are here with enclosed (printed at pages 215-218 post). The estimation is necessarily very rough in the absence of the actual quotations.

(Sd.) M. RAMASWAMI
Fisheries Expert in Sind.

50. Deep-Sea Fishing Scheme (Preliminary).

1. 1.

1. 1.

1. 1.

1. 1.

1. 1.

1. 1.

1. 1.

1. Serial number of Scheme
2. Name of Scheme

Statement of Capital Cost.

	Rs.	Rs.
1. (a) Cost of Hull (for fish carrier) 35 ft. long, 9 ft. beam at Rs. 500 per ft. 35×500 .	17,500	
1. (b) Engine installation and cork insulation	1,000	
		18,500
2. (a) Cost of the Hull (fish carrier) 35 ft. long, 9 ft. beam at Rs. 500 a ft. 35×500 ..	17,500	
New marine engine	14,500	
		32,000
3. (a) Cost of the customs launch "FREDA"	68,000	
3. (b) Cost of removal of one engine and re-arrange- ment of another etc.	1,200	
3. (c) Cork insulation, winch, rope coilers and rope rollers.	4,000	
		73,200
(This launch will be used as fishing vessel)		
Total of the three launches		1,23,700

Statement showing the estimated expenditure under different heading for running the launch to be used as a fishing vessel.

(1) STAFF.

	Rs.	Rs.
Wages to officers	1,200	
Wages to the Engineer	1,200	
Wages to the crew	2,220	
Allowances and honoraria	2,800	
Ration for crew	2,000	
		9,420*

* For details, please see page 216 post.

(2) STORES.

A. Consumable.—

(i) Deisel oil, soap, sponge-cloth, cotton waste, depreciation charges, one set of driff nets and gear etc.

Deisel oil. Consumption of 20,000 gallons of oil during the year of 3,000 hours, at Rs. 100 per ton.

Ton = 250 gallons $20,000 \times 100 / 250$..	8,000	
(ii) One set of Drift nets, gear etc... ..	10,000	
(iii) Other expenses	19,000†	
		37,000

† For details, please see page 216 post.

	Rs.	Rs.
B. <i>Non-Consumable.</i> —		
Tools, cooking utensils, crockery and cutlery, linen anchor, life rafts, cane baskets, buckets, kerosene-lamps, tins, charts, boxes, wires, torches, etc.	3,500	
C. <i>Other Expenses.</i> —		
Basin rent, wharfage, towing repairs and renewals, dry docking and printing	3,000	
		6,500
	Total Rs. ..	52,920
	or say	53,000

Details of the staff.—

ails of the staff.—				Rs.
Pay of Inspector of Fisheries	Rs. 100—10—150	$100 \times 12 =$		1,200
Pay of Engineer	Rs. 100—5/2—130	$100 \times 12 =$		1,200
Tindal	Rs. 50—1—60	$50 \times 12 =$		600
Three Lascars including oilman	25/- $3 \times 25 \times 12$	$\times 12 =$		900
Three Fishermen to operate nets at	20/- 3×20	$\times 12 =$		720
Allowances and Honoraria	.. ..	.. ..		2,200
Marine Allowance to Inspector	Rs. 50/- p.m.	$50 \times 12 =$		600
Ration for the crew	.. ..	.. ..		2,000
Total Rs. ..				9,420

Details of other expenses.—

Paints	300
Soap	100
Cotton waste	200
Soda	50
Ropes	1,000
Matches and Medicines	1,000
Water	200
Ice	1,000
Grease and Lubricating oil etc. ..	1,000
Insurance charges per month $2\frac{1}{2}$ per cent. premium on Rs. 80,000 i.e. Rs. 160 per month $160 \times 12 = 1,920$..	1,920
Interest and depreciation charges at 6 per cent. interest and 10 per cent depreciation ..	12,000

Total Rs. .. 18,770
or say Rs. .. 19,000

50. Deep-Sea Fishing Scheme (Preliminary).
1. Serial number of Scheme
2. Name of Scheme

Approximate cost of upkeep and operation of Fish Carrier Launch with a carrying capacity of 10,000 to 12,000 lbs. of fish and with a 60 H. P. Engine and 10 to 13 knots speed—

—————: 0 :—————
WORKING CHARGES PER YEAR.

Details of the Crew.—

		Rs.
One Mechanic @ Rs. 80 per mensem..	$..80 \times 12 =$	960
One Tindal @ Rs. 50 per mensem..	$..50 \times 12 =$	600
One Khalasi @ Rs. 30 per mensem..	$..30 \times 12 =$	360
Two Crew @ Rs. 20 per mensem each	$2 \times 20 \times 12 =$	480
One Oilman @ Rs. 20 per mensem	$..20 \times 12 =$	240
	Total Rs. ..	2,640

Items:—

1.	To cost of crew wages	..	..	..	2,640
2.	To cost of feeding crew	..	..	..	2,000
3.	To cost of fuel oil @ 50 gallons per trip and 40 trips in a year i.e., 2,000 gallons @Rs. 100 a ton	..	..	..	800
4.	Cost of lubricating oil @2 gallons per trip and 40 trips in a year i.e. 80 gallons at Rs. 5 a gallon	..	..	..	400
5.	Cost of small stores	..	..	..	320
6.	Wharfage on ice, oil, basing rent	..	..	..	320
7.	Consumption of ice, one ton per trip i.e. 40 tons a year at Rs. 28 per ton.				1,120
8.	Insurance charges per month, $2\frac{1}{2}$ per cent. premium on Rs. 40,000 i.e. Rs. 80 per mensem	..	..	..	960
9.	Interest and depreciation charges at 6 per cent. interest and 10 per cent. depreciation				6,000
10.	Maintenance, storage, painting and repairs etc.	..			600
				Total Rs.	15,160
				SAY Rs.	15,500
	Working charges for two fish carriers	..	..	Rs.	31,000

Statement of marketing expenses etc.

Cartage charges from Boat Basin to Market at two pies on one lb...	2 Pies.
Cooly charges for carrying fish per lb.	2 Pies.

1. Serial Number of Scheme 51.
2. Name of Scheme Deep-Sea Fishing with up-to-date power Vessels. (Supplementary.)
3. Brief description of scheme. Prolific Marine fishing areas for prime fishes are available in Sind Waters and in the Sea-North upto Persian Gulf and off Cutch coast in the south. In the first instance one Motor fishing vessel for fishing experiment with drift nets Danish seine and ring nets and two fast motor launches as fish carriers are suggested. After two years one Steam Trawler (Castle type) and one Drifter-Cum-Trawler for fishing experiments, to exploit the sea fisheries and six more fast Fish-Carriers with cork insulated fish-hold may be employed.
4. Area selected for application, if applicable:—
Sind Province—Fish distribution will extend to the neighbouring Provinces also, *e. g.* the Punjab, the North-Western Frontier and the United Provinces, etc.
5. Time expected to be taken for execution :—
Three months from the time the vessels and equipment reach Karachi Harbour.
6. Brief details of the staff required and how the staff is proposed to be obtained :—
 - (a) *Upper Staff for planning:*—
Fisheries Expert (already available).
 - (b) *Upper staff for execution:*—

<ol style="list-style-type: none"> (i) Assistant Director (Marine). (ii) Skipper. (iii) Two Mates. (iv) Two Engineers. 	} One Master Fisherman (Skipper) and one Mate are to be recruited from the naval personnel now in India or from U. K. for a period of one year. } One Mate for Drifter-Cum-Trawler can be recruited from Madras, Ceylon or Bombay. Rest of the staff can be recruited locally, namely Coxwain, Engineer, Greaser, Lascars and Bundari.
--	---

1. Serial number of Scheme	50.	Deep-Sea Fishing Scheme (Preliminary).	
2. Name of Scheme			
		(v) One Senior Clerk.	
		(vi) Two Junior Clerks.	
		(vii) One Typist.	
		(c) Lower Staff—	
		(i) Five Coxswain, (three in Trawler two in Drifter-Cum-Trawler.)	
		(ii) Nine Tindals (8 in Carriers, one fishing Vessel)	
		(iii) Nine Drivers. (Do.)	
		(iv) Forty-four Lascars (eight in Trawler, twelve in Fishing vessel and Drifter-Cum-Trawler (six in each) twenty-four in eight Fish Carriers (three in each).	
		(v) Thirteen Oil men or greasers (two in Trawler, two in Drifter-Cum-Trawler, one in fishing vessel, one in each of eight Carriers).	
		(vi) Two Peons.	
			To be ob- tained by local se- lection.

7. Rough estimate of cost at the existing rates—

	Rs.
(i) Capital :—	
Trawler	3,00,000
Drifter-Cum-Trawler	1,20,000
Fishing Vessel	80,000
Eight Carriers (each at Rs. 32,000.)	2,56,000
	<hr/> 7,56,000
(ii) Recurring	4,56,000 per annum.

8. Extent to which the scheme would be pro-
ductive :—

Receipts	Rs. 5,00,000 per annum.
----------------	-------------------------

9. Extent to which the scheme will cater for Demobilized Indian Naval personnel can be absorbed.
returned service personnel :—
10. General description of plant, equipment and stores :—
- | | |
|---------------------------------|--|
| | (i) Trawler. |
| | (ii) Drifter-Cum-Trawler (fully equipped). |
| (i) to be imported from abroad. | (iii) Nets :— (i) Trawl nets (ordinary— |
| (ii) to be obtained in India. | (ii) Trawl nets (V. D. Big and small). |
| | (iii) Danish Seine net. |
| | (iv) Scotch ring net. |
11. Labour force required in the case of the larger schemes. Locally available.
12. Whether the assistance of Central Government is likely to be required for obtaining materials, machinery or technical personnel :— Yes, for obtaining materials mentioned under item No. 10 above and for recruiting a Skipper and a Mate.
13. Brief indication, where applicable, of further development contemplated on the lines of this scheme in succeeding five year periods :— If five years experiment is successful commercially and if further scope for still greater exploitation is found, the fleet may be expanded.
14. Any other remarks or information .. Karachi is fortunately situated in a favourable position by nature for deep sea fishing exploitation, on account of suitable harbour, suitable fishing area in close vicinity and railway communications with the important cities in North India for fresh fish distribution.

1.	Serial number of Scheme	50.	Deep-Sea Fishing Scheme (Preliminary).	waters
2.	Name of Scheme			
1.	Serial number of Scheme	52.	Fish Cannery.	
2.	Name of Scheme	..	Canning is the only known method of preserving the food for the longest possible period. Canned fish can keep well for even 7 to 8 years. There are	
3.	Brief description of scheme	..	paration with the vinegar can safely be kept for three years. There are plenty surplus prime fish and prawns available in Sind waters which are quite suitable for canning. When the swift motor fish carriers proposed in the Deep-Sea Fishing Scheme are employed, there should be no difficulty in the procurement of raw materials in absolutely fresh condition for the cannery.	
4.	Area selected for application, if applicable	..	Karachi.	
5.	Time expected to be taken for execution	..	Eight to ten months after the receipt of the plant in Karachi.	
6.	Brief description of the staff required and how the staff is proposed to be obtained :—		<p>(a) <i>Upper staff for planning</i>— Fisheries Expert (already available)</p> <p>(b) <i>Upper staff for execution</i>— <i>(i)</i> Superintendent. <i>(ii)</i> One Mechanic. <i>(iii)</i> One Foreman.</p> <p>(c) <i>Lower staff</i>— <i>(i)</i> Six machine men. <i>(ii)</i> Six packers. <i>(iii)</i> One Operator. <i>(iv)</i> Six Lascars.</p>	<p>One post of Superintendent—Selection by Public Service Commission. Rest by local selection.</p>
7.	Rough estimate of cost at the existing rates:—			
	(i) Capital	..	Rs. 2,30,000	
	(ii) Recurring	..	Rs. 2,57,000 per annum.	
8.	Extent to which the scheme would be productive :—			
	Receipts :—	..	Rs. 4,00,000 per annum.	

9. Extent to which the scheme will cater for returned service personnel. Some of the trained technicians can be absorbed.
10. General description of plant, equipment and stores :—
- | | | | |
|--------------------------------|----|---|--|
| (i) to be imported from abroad | .. | { | (a) Canning plant complete.
(b) Tin plates.
(c) Rubber rings.
(d) Solder. |
| (ii) to be obtained in India | .. | | Remaining stores etc. can be had locally. |
11. Labour force required in the case of the larger Schemes. Fish curers.
12. Whether assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel :— Yes.—for the procurement of the articles mentioned against item No. 10 (i) above.
13. Brief indication, where applicable of further development contemplated on the lines of this scheme in succeeding five year periods. If in the first five years the results are satisfactory, another canning factory may be started or the first one enlarged.
14. Any other remarks or information :— If a Canning Expert for Prawn pickling can be recruited from America it will be a great help.

1. Serial number of Scheme

2. Name of Scheme

1. Serial No. of Scheme

2. Name of Scheme

3. Brief description of Scheme

53

Scheme for the establishment of an up-to-date Marine Aquarium at Karachi

An Aquarium besides being an institution of educational value to school children and higher students of Natural Science will serve also as Research Station most indispensable for all studies in the living condition of all aquatic organisms. Every big city of importance has an Aquarium and this is usually the pride of the nation that owns it.

Karachi—Clifton.

4. Area selected for application, if applicable

Eight months to one year after Government sanction the scheme.

5. Time expected to be taken for execution

6. Brief description of the staff required and how the staff is proposed to be obtained.

(a) Upper staff for planning :—

Fisheries Expert (already available).

(b) Upper staff for execution :—

- (i) One Curator.
- (ii) One Head Door-keeper.
- (iii) One Mechanic.

By local selection.

(c) Lower staff :—

- (i) Three Door Keepers.
- (ii) Two Lascars.
- (iii) One peon.

7. Rough estimate of cost at the existing rates—

(i) Capital	Rs. 1,80,000
(ii) Recurring	Rs. 12,422 (per annum).

8. Extent to which the scheme would be productive.	..	..	..	Rs. 12,000 (per annum)
Receipts	...			
9. Extent to which the scheme will cater for returned service personnel.				
10. General description of plant, equipment and stores :—				
(i) to be imported from abroad.				
(ii) to be obtained in India.	..			
11. Labour force required in the case of the larger schemes.	..		Nil.	
12. Whether the assistance of the central Government is likely to be required for obtaining the materials, machinery or technical personnel.				
13. Brief indication, where applicable of further development contemplated on the lines of this scheme in succeeding five year periods.				
14. Any other remarks or information				

50. Deep-Sea Fishing Scheme (Preliminary).

1. Serial No. of Scheme ... 54. Scheme for Smoke Houses (Demonstration).
2. Name of Scheme ... Smoke produced by Teak-Wood saw-dust and rice husk is also a pre-servative much appreciated in the West. Some of the fish caught in fair abundance in Sind could lend themselves admirably for smoking. Smoked fish will be much appreciated by the Defence Forces stationed in India and can be produced here and this will ease the shortage situation for this kind of product.
3. Brief description of Scheme ...

4. Area selected for application, if applicable—
 (i) Palla Mian at Kharochan } both in Karachi District along the coast.
 (ii) Ibrahim Hydri.

5. Time expected to be taken for execution — One month after the Scheme is sanctioned.

6. Brief details of the staff required and how the staff is proposed to be obtained.

Fisheries Expert (already available).

(b) *Upper staff for execution* :—

(i) Assistant Superintendent (already available.)

(ii) One Operator at Mian. } By local selection.

(c) *Lower staff* :—

Coolies on daily wages. }

7. Rough estimate of cost at the existing rates..

(i) Capital	Rs. 1,650
(ii) Recurring	Rs. 10,118 (per annum).

8. Extent to which the Scheme would be productive.	Rs. 11,100 (per annum.).
9. Extent to which the Scheme will cater for returned service personnel.	
10. General description of plant, equipment and stores.	
(i) to be imported from abroad.	
(ii) to be obtained in India.	Nil.
11. Labour force required in the case of the larger schemes.	
12. Whether the assistance of the Central Government is likely to be required for obtaining the materials, machinery, or technical personnel.	

If the experiment proves successful, more smoking centres will be started all over the Province.

13. Brief indication, where applicable, for further development contemplated on the lines of this Scheme in the succeeding five year periods.
14. Any other remarks or information

The scheme has been approved by Government under their Resolution, General Department, No. 5001-G.B./45(I), dated the 27th March 1945, and is likely to be put into operation in the year 1946-47.

1.	Serial number of Scheme	50.	Deep-Sea Fishing Scheme (Preliminary).	Fishing gear for marine fishes are available in Sind waters
2.	Name of Scheme			
1.	Serial No. of Scheme	55.	Scheme for Palla (Hilsa) Hatchery.	
2.	Name of Scheme			
3.	Brief description of Scheme		This Scheme attempts at augmenting the supply of this valuable Hilsa fish in the Indus river. The mature fish are caught, stripped, eggs and milt collected and artificially fertilized and hatched. The young ones are reared upto fingerling size and then released in the river. By adopting this scientific method, much of the destruction thus caused to eggs is avoided.	
4.	Area selected for application, if applicable		The course of the Indus and the Sea off Sind Coast.	
5.	Time expected to be taken for execution		The site for erecting the Hatchery is to be selected, after the location of spawning grounds. Six months after the scheme is sanctioned.	
6.	Brief details of the staff required and how the staff is proposed to be obtained.		(a) <i>Upper staff for planning</i> :— Fisheries Expert (already available).	
			(b) <i>Upper staff for execution</i> :—	
			(i) Assistant Superintendent.	} Staff to be obtained by local selection.
			(ii) Research Assistant.	
			(iii) Laboratory Assistant.	
			(iv) Junior Clerk.	
			(c) <i>Lower staff</i> :—	
			(i) Two field-men.	
			(ii) One peon.	
7.	Rough estimate of cost at the existing rates.			
	(i) <i>Capital</i>			Rs. 19,430
	(ii) <i>Recurring</i>			Rs. 7,612 (per annum)

8. Extent to which the Scheme would be productive. As already stated above, this scheme attempts at augmenting the fresh water fish supply. In the course of time the yield of Indus river, big tanks and lakes of Sind will be increased many fold.

9. Extent to which the Scheme will cater for returned service personnel. Nil.

10. General description of plant, equipment and stores :—

(i) to be imported from abroad.	} MacDonald Jars could be made to order from local glass factories otherwise may have to be ordered from America.
(ii) to be obtained in India.	

11. Labour force required in the case of the larger schemes. Nil.

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery, or technical personnel. Nil.

13. Brief indication, where applicable of further development contemplated on the lines of this scheme is succeeding five year periods. If this Hatchery produces good results as it is expected, a few more may be started at important fresh water fishing areas.

14. Any other remarks or information. Nil.

KEY STATEMENT OF SCHEMES FOR XI— "FISHERIES".

Serial Number of scheme.	Description of the scheme.	Approximate cost of five year plan in thousands		Category of scheme (viz : Special priority, All-Province, etc).	Special remarks, if any.
		Capital.	Recurring.		
(1)	(2)	(3)	(4)	(5)	(6)
		Rs.	Rs.		
45	Development of edible oysters.	4	24	Special priority.	*See the remarks below.
46	Development of Prawn fisheries.	8	72		
47	Manufacture of Fish guano and fish meal.	10	109	All province.	
48	Stabilising the fishing industry.	1	40		
49	Construction of fish-curing yards.	66	318		
50	Deep Sea Fishing Scheme (preliminary).	7,56	13,51	Particular area.	
51	Deep-Sea fishing with up-to-date power vessels (supplementary).				
52	Fish Cannery ..	2,30	12,85	All province.	
53	Establishment of an up-to-date Marine Aquarium.	180	62		
54	Construction of smoke houses (demonstration).	2	51		
55	Scheme for Palla (Hilsa) Hatchery.	19	38	Particular area.	
	Total ..	12,76	33,50		
		46,26			

*The scheme is divided in three stages to be executed in the course of five years.

1st stage.	{	1st year Capital	Rs. 1,27,200	(Purchase of one fishing vessel and two fish carriers.)
		Recurring	Rs. 1,10,500	
	{	2nd year Capital	Rs. Nil.	
		Recurring	Rs. 1,15,500	
2nd stage.—3rd year		Capital	Rs. 1,50,000	(Purchase of drifter-cum-trawler and one fish carrier.)
		Recurring	Rs. 2,25,000	
3rd stage.	{	4th year Capital	Rs. 4,79,000	(Purchase of trawler and five fish carriers.)
		Recurring	Rs. 4,50,000	
	{	5th year Capital	Rs. Nil.	
		Recurring	Rs. 4,50,000	

1. Serial number of Scheme
2. Name of Scheme
3. Deep-Sea Fishing Scheme (Preliminary).
4. In the fishing zone for some fishes are available in Sind waters

POST-WAR PROGRAMME FOR THE DEVELOPMENT OF FISHERIES IN SIND.

———:o:———

1st Year.—

1. Survey of Marine, Estuarine and fresh water fisheries of the Province with a view to ascertain the present position of the Industry, the resources available and make suggestions for the future development on a progressive scale, to define the general policy to be adopted and the aims for achievement.

2. Starting of a permanent independent Department of Fisheries to execute the above defined policy and aims on the lines suggested and approved.

3. Initiation of a few schemes of undoubted utility and urgent need, *e.g.*, the resuscitation of the depleted but once excellent edible oyster beds, the establishment of Government Fish Curing Yard at Ibrahim Hyderi to improve the quality of cured fish, which are possible to be undertaken forthwith without the need for importation of any plants or materials from abroad.

4. Initiation of a few experiments on manufacture of certain fish and prawn by-products namely smoked fish and "semi-dried" prawns respectively, and improved methods of fishing.

5. Initiation of systematic research (Biological and Technological) on the solution of fishery (both Marine and Fresh-water fisheries) problems and collection of fishery statistics.

2nd Year.—

1. Continuation of the systematic research and publication of results for the benefit of trade.

2. Opening of other four Government Fish Curing Yards.

3. Establishment of Hilsa Hatchery.

4. Deep sea fishing experiments with a drifter or a cutter (Power boats with improved methods of fishing and fish carrier.

5. Establishment of smoke houses for Hilsa and other marine fishes, if initial experiments are successful and market assured.

6. Establishment of a simple mechanical, pilot demonstration plant for fish manure and fish meal from fish waste and uneconomical miscellaneous fish.

7. Experiments on manufacture of prawn or fish paste or pickle on cottage industry scale to be processed with available small "Auto claves."

8. Fish and prawn canning if canning plant is available.

9. Detailed survey of specific areas (fresh water and estuarine) with a view to the location of fresh water and marine Fish Farms to augment the supply of fish.

10. Starting of the "Bureau of Fisheries" and publication of Market Fisheries Bulletins and statistics by the Fisheries Marketing Officer.

11. Starting of Tank and "Dhand" (Lakes) stocking operations if the spawning grounds of Carps (*e.g.*, Catla (Theli) and Rohu (*Labeo rohita*; Sindhi-Dambhra) are located for augmenting fresh water fish supply.

12. Construction of one experimental Fish pass for Hilsa and Carps.

13. Fish refrigeration, cold storage and extension of fresh fish supply to the interior.

14. Establishment of Co-operative institutions for fisher folk.

3rd Year.—

1. Continuation of research and publication of results.

2. Opening of some more fish curing yards if the results of the opening of the five yards previously, so justify.

3. Opening of some more Hilsa and Carp Hatcheries if spawning grounds are found extensive and initial experiments are found successful.

4. Extension of deep sea fishing experiments. As the European war will be over by this time a few Trawlers, Drifters and Danish Seine Net Cutters may be available at cheap rates, for utilisation in these waters. A virgin prolific ground up to the Persian Gulf is available for intensive exploitation.

5. Establishment for demonstration of an up-to-date automatic Fish Meal Plant imported from abroad, for which there will be sufficient raw materials by this time.

6. Fish canning—improving products and adding fresh items of production.

7. Opening of other fish farms in suitable localities for indigenous and exotic fish *e.g.*, Gourami.

8. "Bureau of Fisheries" will continue to publish annual Bulletin.

9. Intensive stocking of Tanks and Dhands with carps and exotic fish.

10. Measures for speedier transportation and distribution of sea and fresh water fresh fish to the distant interior of the province and up-country.

4th and 5th Years.—

Extension of all or of such items under 2nd and 3rd years as are found essential in the experience of the first three years.

Establishment of shore organisation on up-to-date lines for fish landings and distribution.

N.B.—Ten-year plans will depend on the results of the five-year plans.

With a big cold store and refrigerating Plant at Karachi.—one such now in use by the Defence Force, may be available after war—it should be possible to operate a fleet of at least three Steam Trawlers of Castle type and a dozen or so of Drifter-Cum-Cutters with a score of swift Fish Carrier in these waters. There is ample scope for all these here.

XII—CO-OPERATION.

— 0 —

1.	Serial No. of Scheme	..	..	56.
2.	Name of Scheme	..	..	Land Colonization.
3.	Brief description of Scheme	..	..	The Scheme contemplates to resettle and re-employ on the land the ex-soldiers or their families or other land-less persons with a bias towards agriculture. The Scheme can be launched only if sufficient area of land in compact blocks is made available by Government. It is not sure whether compact area of 1,600 acres or 3,200 acres are available in the barrage areas in Sind. If Government can reserve areas in compact blocks in the two post-war barrage schemes, the present scheme can work.

Land in compact blocks will be made available not to individuals but to a group of colonists who form themselves into a society on co-operative basis. The main objects of these societies will be :—

- (i) to promote the welfare of the demobilized soldiers or land-less haris and other poor persons by agricultural colonization,
- (ii) to take agricultural land from Government, divide it according to the plan approved by Government and distribute the holding amongst the members,
- (iii) to arrange for the improvement and reclamation of land, if necessary, and to ensure its cultivation,
- (iv) to purchase or own implements, machinery and cattle for hire to members, and
- (v) to borrow funds from the Sind Provincial Co-operative Bank or others on the security of land assigned to them to be utilized in granting loans to members for agriculture expenses and improvement of land.

The society will be on an unlimited liability basis. Assignment will be made in block of 32 acres for each member's family which is considered as an economic holding for a family, and aggregate area assigned to a society specifically formed for this purpose, depending on the number of members in a society which should be 50 or 100 in each society. One or two of 32 acres will be reserved for the society for the purchase of amenities, etc. The membership will be restricted in the instance to those demobilized soldiers with agricultural bias are recommended by Labour Department, and who are willing to settle near the block. In the second instance if any land is available, persons belonging to the neighbouring villages who may be willing to settle near the blocks may be enrolled as members, subject to the approval of the Collector of the District where the land is available for such assignment.

The society will hold the lands on ryotwari tenure and will be responsible for payments of all kinds due to Government as well as local cess. Government will have the right to resume the grant without compensation and re-enter the lands or any portion thereof in case of breach of any of the conditions of assignment or if the scheme fails, but will, in that case, repay to the financing bank the sum to it from the society subject to the limit of the sale value of the

society. The society will make a contribution to the society at Rs. 2 for each member as a free gift towards purchasing shares in the society. On the basis of his membership he will be able to borrow money from the society for reclaiming, improving and cultivating his land. Government will also advance to the society the money required for the purchase of implements with or without interest through the Agriculture Department at a rate not exceeding Rs. 5,000 per 100 colonists. The society will then hire out to members such implements as a small fee as will be utilized for repaying the amount borrowed.

ed from Government. A substantial portion of the net profits of the society will be carried to Reserves called the 'Implements Reserves' which will be utilized for purchasing agricultural implements for the common use of members.

Each member will be bound by the conditions laid down in the bye-laws of the society to be framed by the Registrar and approved of by Government, and will have occupancy right in his holding so long he cultivates it, pays his dues and carries out the provisions of the bye-laws. In the other case, he will be expelled from the society and the land will be given to another eligible person, on payment of the amount already paid towards the value of the land. In case the society is unable to secure any eligible member, the land will revert to the Government. A member will have no right to sublet or mortgage or otherwise encumber his holding unless it is done for raising the loan from the Bank. The holding will also be impartible and will, on the member's death pass on undivided along with the member's interest in the society to his nominee or failing a nominee to his senior male heir, failing such heir it will revert to the society. Holding will however be transferable in block with the sanction of the management of the society and approval of the Collector, after the member has paid the full value of the land.

The value of the land assigned to the society will be fixed by the Revenue Officer, Lloyd Barrage or the Collector of the District concerned, and will be recovered from each member through the society in easy instalments which a member will normally be able to pay within a period not exceeding 20 years, taking into account the net income that he may be expected to derive from cultivation of his land. In cases where the land requires improvement, the assessment will be waived for the first few years as determined by Government.

The survey and demarcation of the blocks into individual holdings should be carried out by Revenue Officer of a Deputy Collector's or Mukh-

tiarkar's grade with the aid of the district revenue establishment appointed by the Revenue Department in consultation with the Surveyor to Government and Superintendent, Land Records. After a Revenue Officer has surveyed the lands selected for a colony, the selection of assignees, the allocation of the land and the starting and initial running of the co-operative societies will be in the hands of an officer lent by the Co-operative Department, for at least three years.

As the object is to make the agriculturist earn comfortable livelihood and provide him with other amenities of life, his income should be supplemented in non-cultivation season. Bee-hive breeding or rope making industry or such other paying cottage industries which could conveniently be started in the group should be explored by the Department of Industries, by appointing a specialist for the purpose, who should be in constant touch with the Registrar and the Special Officer of the Co-operative Departments stated above.

The Agriculture and Veterinary Department should also actively help by deputing a special man of their departments to help and advise the colonists in new methods of cultivation and breeding of cattle, etc. The Medical and Health Departments should also advise the colonists.

The area of land to be colonized should be selected by the Revenue Department in each District. I understand that the scheme as to how much land will be made available for settlement either as grants or by purchase at concessional rates is being worked out for the consideration of Government of India. The present scheme on co-operative basis may therefore be considered to fit in with the general scheme.

This will depend mainly on the availability of the land.

4. Areas selected for application, if applicable...

5. Time expected to be taken for execution ..

6. Brief details of staff required and how staff is proposed to be obtained.

Staff.		Grade.
One District Co-operative Officer..	Rs. 170—10—240—	EB—15—300
Two Clerks	Rs. 25—5/2—	55.
Two Peons	Rs. 16.	

They will be deputed from the Department. In their places substitutes will have to be appointed. It is necessary that such substitutes should be trained up ahead in the Co-operative Department to know the working of each class of societies to be able to fill in the places without dislocation of work. They will be trained as Government Co-operative Inspectors in the grade of Rs. 80—5—120—EB—15/2—150. In case a sufficient number of societies are started in each district, the necessity of one Assistant Registrar with staff would also arise.

7. Rough estimates of cost at existing rates.—

(i) Capital	} In view of the above, the estimated cost cannot be worked out.
(ii) Recurring	

8. Extent to which the scheme will be productive. The Government will realize the value of the land at market price and get assessment and other taxes also regularly every year.

9. Extent to which the Scheme will cater for returned service personnel. Preference in organizing societies and obtaining land will first be given to the ex-soldiers of Sind Province. Failing them, the second choice should be given to the landless haris of the Province. In the last resort, the land available may be allowed to ex-soldiers of other Provinces.

10. General description of plant, equipment or stores. —
- | | | |
|--------------------------------|----|---|
| (i) to be imported from abroad | .. | } Machinery in the shape of tractors and implements will be required either from India or abroad, details whereof cannot be given at present. |
| (ii) to be obtained in India | .. | |
11. Labour force required in the case of the Nil.
12. Whether the assistance of the Central Government is likely to be required for obtaining material, machinery or technical personnel. Yes, may be required.
13. Brief indication, when applicable, of further development contemplated on the lines of the scheme in succeeding five year periods Nil.
14. Any other remarks or information .. The above Scheme is worked out with suitable modifications on the lines of Madras Colonization Scheme.

1.	Serial No. of Scheme	57	Marketing Development work and organisation of Co-operative Purchase and Sale Societies.
2.	Name of the Scheme	..	..
3.	Brief description of Scheme	..	The Scheme contemplates the establishment of a net work of regulated markets in suitable areas and organisation of Co-operative Purchase and Sale Societies for every such market, working as commission agents on behalf of other societies in the interior or primary producers. It is proposed to organise 39 such societies during the first 5 years of the Post War period according to the programme laid down in the statement printed at page 243 post. Out of the proposed eight District Societies, the one at Karachi will also function as the Provincial Marketing Society. A list of places where markets are to be established and the nature of commodities to be regulated are also shown in columns 2 and 3 the statement printed at pages 242—243 post.

The object underlying the formation of these societies is to eliminate the middleman and to purchase and sell agricultural produce and other goods and then sell them to the consumers in accordance with the rules made by the marketing committees under the Sind Agricultural Produce Market Rules, 1943. The regulation of the marketing machinery will enable the agriculturist to realise better returns for his produce than reaches him now after the leakage involved in the present system. It is proposed to form these societies in the trade centres shown in the said statement with a view to facilitating the formation of the marketing committees. These societies will co-operate with the market committees in the introduction of the essential marketing reforms such as grading, standardisation, etc., also the system of licensed ware-houses. It is desirable to have these organisations to fall back upon, in case the traders oppose any measure for the regulations of the trades.

- 4. Areas selected for application, if applicable.. Whole Province.
- 5. Time expected to be taken for execution .. Five years as per programme laid down in the said statement.

6. Brief details of the staff required and how staff is proposed to be obtained.

One Assistant Registrar in the scale of Rs. 240—20—480—E.B.—40—600.
Eight District Co-operative Officers in the scale of Rs. 170—10—240—15—300.

Eight Managers of the District Societies in the grade of Rs. 170—10—240—15—300.

Thirty-three Secretaries of the taluka societies in the grade of Rs. 80—5—120.

Twenty clerks in the scale of Rs. 25—5/2—75.

In addition to the above staff, sufficient number of motor drivers and chowkidars will be appointed by the societies direct. The staff in the case of Co-operative Department will be recruited in accordance with the Bombay Civil Service Recruitment Rules while that of the societies and the Marketing Committees will be recruited in the first instance from the Purchase or Accounts Section of the Military establishment from which the surplus staff will be discharged, as soon as the war is over, failing which the staff will be recruited from the Co-operative Department on suitable deputation allowances. It may also be possible to absorb demobilised soldiers for service as lorry drivers, watchmen, etc.

7. Rough estimate of the cost at existing rates—

(i) Capital	Rs 2,000
(ii) Recurring	1,87,000 (in five years).

8. Extent to which the cost will be productive

Non-productive.

9. Extent to which the Scheme will cater for returned military personnel.
As stated above, it may be possible to absorb ex-military personnel for appointment as Managers, Secretaries, lorry drivers, chowkidars, etc.

10. General description of plant, equipment, or stores—

(i) to be imported from abroad
(ii) to be obtained in India
Labour force required in the case of the larger schemes

Lorries, refrigerators-plant, etc.
Building material for construction of the godowns.
Nil.

12. Whether the assistance of the Central Government is likely to be required for obtaining material, machinery or technical personnel.

13. Brief indication, where applicable, of further development contemplated on the lines of the scheme in succeeding 5 year periods.

14. Any other remarks or information

The assistance of the Central Government may be required as stated above.

In due course of time, such societies may undertake highly specialised marketing with its standardisation, grading, packing, etc. also indulge in such industries as are necessary for making the produce marketable with greater advantage.

Government assistance will be needed in the following shape.

- (a) Government should assist these organisations in providing marketing intelligence and technical advice.
- (b) Experience has shown that in the absence of a competent and qualified staff, these societies do not function properly. Government should, therefore, assist them in engaging a suitable secretarial and managerial staff by sharing 50 per cent. of the cost for the first two years and 25 per cent. for the next two years till the societies become self-supporting. Such staff should be deputed at Government cost to other provinces for the purpose of receiving training.
- (c) Efficient functioning of these societies will necessitate the construction of an adequate number of godowns in suitable places. The necessary funds may be provided by Government for this purpose by way of loans to these societies at a rate not exceeding 4 per cent. per annum to be repayable in 20 annual instalments.
- (d) Government should also assist the societies in getting sufficient number of motor trucks and lorries from the Defence Department which will become idle after the war is over. Such lorries may be supplied gratis if possible or on payment in which case the necessary amount should be loaned by Government at 4 per cent. to be repayable in 20 annual instalments.
- (e) Government should introduce a system of licensed ware-houses, if necessary, by special legislation.

STATEMENT SHOWING THE RELEVANT DETAILS OF SCHEME No. 57

(ITEMS Nos. 3 and 5 OF THE SCHEME.)

(1) List of Marketing or Sale and Purchase Societies that are proposed to be organised.

District.	Name of the Marketing place.	Commodities to be regulated and dealt with.	No. of godowns required for each society.
1	2	3	4
Hyderabad ..	Hyderabad District Purchase and Sale Society (already existing).	Wheat, Rice, Cotton	One big godown. (Cost Rs. 35,000.)
	Tando Allahyar (Taluka Bank already existing).	Wheat, Cotton ..	2
	Tando Mahomed Khan ..	Wheat, Rice ..	2
	Matli ..	Wheat, Cotton ..	2
	Badin ..	Rice ..	1
Thar Parkar ..	Mirpurkhas (District Purchase and Sale Society).		One big godown. (Cost Rs. 35,000.)
	Jamesabad ..	Cotton, Wheat ..	2
	Digri or Jhudo ..		2
	Samaro ..		2
	Umerkot ..	Cotton, Wheat, Rice	3
	Khipro or Shadi Pali ..	Cotton, Wheat	2
Nawabshah ..	Nawabshah (District Purchase and Sale Society).		One big godown. (Cost Rs. 35,000.)
	Shahdadpur ..	Wheat, Cotton ..	2
	Tando Adam ..		2
	Sakrand ..		2
	Pad-Idan ..	Wheat, Cotton, Juwar.	2
	Sinjhero ..	Wheat, Cotton, Bajar.	2
Sukkur ..	Sukkur (District Purchase and Sale Society).	Wheat, Rice ..	One big godown. (Cost Rs. 35,000.)
	Shikarpur (Already existing) ..	Juwar, Bajar, Mattar.	2 (already existing).
	Garhi Yasin ..		2
	Ghotki ..		2
Upper Sind Frontier.	Jacobabad (District Purchase and Sale Society).		One big godown. (Cost Rs. 35,000.)
	Thul ..	Rice, Wheat, Juwar,	2
	Kandhkot ..	Oil seeds.	2
	Garhi Khairo ..		2
Larkana ..	Larkana (District Purchase and Sale Society).	Rice, Wheat, Juwar,	One big godown. (Cost Rs. 35,000.)
	Kambar ..	Oil seeds.	2
	Ratodero or Naodero ..		2
	Shahdadkot ..	Rice, Cotton, Wheat, Oil seeds, Juwar.	3
	Nasirabad (Taluka Warah) ..		2
	Badah (Taluka Dokri) ..	Rice, Wheat ..	2
Dadu ..	Dadu (Sale and Supply Society already existing).	Rice, Wheat, Juwar Oil seeds.	One big godown. (Cost Rs. 35,000.)
	Mehar ..		2
	Sita Road ..	Rice, Wheat ..	2

STATEMENT SHOWING THE RELEVANT DETAILS OF SCHEME No. 57—(contd.)

District.	Name of the Marketing place.	Commodities to be regulated and dealt with.	No. of godown required for each society.
1	2	3	4
Karachi	Karachi (Provincial Co-operative Marketing Society).	Every kind of Agricultural produce.	One godown costing one lac of rupees.
	Mirpur Sakro	Rice	1
	Tatta	Rice, Wheat	1
	Sujawal	Rice, Wheat, Oil seeds.	2
	Mirpur Bathoro	Rice, Oil seeds	1
	Jati or Moghul Bin		1
	Chuhar Jamali		1
	Provincial Co-operative Marketing Society .. ..	.. ..	1
	District Purchase and Sale Societies .. ..	.. ..	7
	Taluka Branches of District Purchase and Sale Societies .. ..	.. ..	33
	Godown costing two lacs .. ..	.. ..	1
	Godowns costing 35,000 each .. ..	.. ..	7
	Godowns costing 5,000 each .. ..	.. ..	59

(2) Programme of Work.

- 1st Year .. Organization of District Purchase and Sale Societies in each of the Districts; Organization of Provincial Marketing Society at Karachi; Organization of Taluka Societies in Hyderabad District and developing the existing Sale Societies in other talukas; Construction of godowns in Districts including Karachi.
- 2nd Year .. Organization of Taluka Societies at—
 1 place of Karachi District;
 2 places of Thar Parkar District;
 2 places of Nawabshah District;
 1 place of Sukkur District;
 1 place of Upper Sind Frontier District;
 1 place of Larkana District;
 1 place of Dadu District.
 Construction of Godowns in 4 talukas in Hyderabad District as also at the above places.
- 3rd Year .. Organization of Taluka Societies at—
 1 place of Karachi District;
 1 place of Thar Parkar District;
 1 place of Nawabshah District;
 1 place of Sukkur District;
 1 place of Upper Sind Frontier District;
 1 place of Larkana District;
 1 place of Dadu District.
 Construction of Godowns at the above places.
- 4th Year .. Organization of Taluka Societies at—
 2 places of Karachi District;
 1 place of Thar Parkar District;
 1 place of Nawabshah District;
 2 places of Larkana District;
 1 place of Upper Sind Frontier District;
 Construction of godowns at the above places and consolidation of work.
- 5th Year .. Organization of Taluka Societies at—
 2 places of Karachi District;
 1 place of Thar Parkar District;
 1 place of Nawabshah District;
 1 place of Larkana District.

1. Serial number of Scheme ..
2. Name of Scheme ..
3. Brief description of scheme ..
4. Areas selected for application, if applicable..
5. Time expected to be taken for execution ..
6. Brief details of the staff required and how it is to be obtained.

58 Re-organisation of the Co-operative Department.
 The co-operative movement, if it is efficiently organised and maintained, will be a suitable agency for implementing various Post-War Development schemes. It is, therefore, considered necessary to re-organise and overhaul the entire Co-operative Department so that the movement should be enabled to play its proper part in the scheme of Post-War Planning.

Whole Province.

The scheme is to be executed immediately.
 The following staff is necessary for the execution of the scheme :—

Gazetted.

One Registrar, Co-operative Societies, Sind ..	Rs. 1,200—75—I,500.
Two Assistant Registrars ..	Rs. 235—15—400—EB —20—600.
One Special Auditor ..	Rs. 150—10—240—EB —15—300.
Eight District Co-operative Officers ..	
One Office Superintendent ..	

Non-Gazetted (Executive).

Twenty-five Government Co-operative Inspectors.	Rs. 80—5—120—EB— 15/2—150.
One Accountant	
Two Head Clerks to the Assistant Registrars	
Five Senior Clerks ..	Rs. 85—5/2—100 (old)/ Rs. 75—5/2—90 (new).
Twenty-six Junior Clerks ..	Rs. 30—5/2—80 (old)/ Rs. 25—5/2—75 (new).
Sixteen Senior Tapedars ..	Rs. 50—5/2—50
Thirty-three Junior Tapedars ..	

Non-Gazetted (Ministerial)..

Inferior Establishment.

One Naik	..	..	Rs. 21—1/3—25.
Fifty-one Peons	..	..	Rs. 16—1/5—20.
Forty-nine Kotars	..	..	Rs. 14 per mensem each.

The staff will be recruited in accordance with the relevant rules laid down in the Bombay Civil Services Recruitment Rules.

7. Rough estimate of the cost at existing rates.
 - (i) Capital. .. Nil.
 - (ii) Recurring. .. Approximately Rs. 2,50,000 per annum.
8. Extent to which the scheme will be productive. Nil.
9. Extent to which the scheme will cater for the returned service personnel. 10 per cent. of the vacancies will be reserved for the returned service personnel with approved war service.
10. General description of the plant, equipment or stores.
 - (i) to be imported from abroad.
 - (ii) to be obtained in India.
11. Labour force required in the case of the larger schemes. Nil.
12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.
13. Brief indication, where applicable, of further development contemplated on the lines of the scheme in the succeeding five-year periods.

Any other remarks or information.. .. The scheme has already been put into force with effect from the 1st April 1945.

KEY STATEMENT OF SCHEMES FOR XII—CO-OPERATION.

Serial Number of the scheme.	Subject of Development.	Approximate cost of five year plan in thousands.		Category of scheme (namely Special Priority, All Province, etc.)	Special remarks, if any.
		Capital.	Recurring.		
1	2	3	4	5	6
		Rs.	Rs.		
56	Land Colonization	Details of the cost not worked out.	1,87	Particular area.	
57	Co-operative Purchase and Sale Societies	2		All province.	
58	Re-organisation of the Co-operative Department ...	Nil.	12,50	Special priority.	The scheme has already been put into effect from 1st April 1945.
	Total ...	2	14,37		
			14,39		

XIII.—INSTRUCTIONAL PROPAGANDA.

—:o:—

There is no scheme under this heading of development. Please see Chapter XIII of Part I of this publication.

8. Extent to which the scheme will be productive. Nil.
9. Extent to which the Scheme will cater for returned service personnel. Mechanics and Clerks can be recruited from the returned service personnel.
10. General description of plant, equipment or stores—
 (i) to be imported from abroad { Generators, microphones, grammophones and loud speakers to be imported from abroad.
 (ii) to be obtained in India Nil.
11. Labour force required in the case of the larger schemes. Nil.
12. Whether the assistance of the Central Government is required for obtaining materials, machinery or technical personnel.)
13. Brief indication, where applicable, of further development contemplated on the lines of the scheme in succeeding five-year periods. Cannot be forecast now.
14. Any other remarks or information .. Nil.

60.

1. Serial No. of Scheme	..	..	VILLAGE WATER SUPPLY.
2. Name of Scheme	..	..	There are many villages in Sind which have not protected water supply. Villagers at present take water for drinking purposes from canals. It is proposed to dig 200 wells and also take over about 800 private and Local Board wells for maintenance.
3. Brief description of Scheme	..	..	Whole Province.
4. Areas selected for application, if applicable.	..	..	5 years.
5. Time expected to be taken for execution	..	..	One Executive Engineer. One Assistant Engineer. Two Overseers. One Accountant One Storekeeper.
6. Brief details of staff required and how staff is proposed to be obtained.	..	..	Three Junior Clerks. Eight Mechanics. Peons and Khalasis.

To be borrowed from the Public Works Department.

To be recruited by advertisement or local selection.

7. Rough estimate of cost at existing rates—

	Capital.	Rs.	Recurring.	Rs.
1st year	..	1,24,300	..	1,20,320
2nd year	..	1,20,000	..	1,28,320
3rd year	..	1,35,000	..	1,36,320
4th year	..	Nil.	..	1,45,320
5th year	..	Nil.	..	1,45,320
Total	3,79,300	....	6,75,600

CIRCULATING LIBRARIES AND READING ROOMS.

It is proposed to provide a library and reading room with complete outfit for every village which has school. It is proposed to circulate the libraries from village to village, so that better use be made of the books we buy.

Whole Province.

4. Areas selected for application, if applicable...
5. Time expected to be taken for execution ... 5 years.
6. Brief details of staff required and how staff Nil.
is proposed to be obtained.
7. Rough estimate of cost at existing rates—

Capital Recurring.		Rs.		Rs.	
1st year	..	..	29,200	..	4,800
2nd year	..	..	29,200	..	9,600
3rd year	..	..	29,200	..	14,400
4th year	..	..	29,200	..	19,200
5th year	..	..	Nil	..	19,200
Total ..		1,16,800		67,200	

8. Extent to which the Scheme will be productive. Nil.
9. Extent to which the Scheme will cater for returned service personnel. Nil.

10.	General description of plant, equipment or stores—	
	(i) to be imported from abroad ..	
	(ii) to be obtained in India ..	
11.	Labour force required, in the case of the larger Schemes.	
12.	Whether the assistance of Central Government is likely to be required, for obtaining materials, machinery or technical personnel.	Nil.
13.	Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five-year periods.	
14.	Any other remarks or information ..	

62. VILLAGE MEDICINE CHESTS.

It will be impossible for Government to provide a dispensary for each village. It will take many years before the dispensary is established even within five miles distance of every village. An easy and cheap method of making elementary medicines available in each village is to stock some sample medicines with the school teachers who should be given some preliminary training to distribute these medicines. It is proposed to train 100 teachers and keep 100 medicine chests.

Whole Province.

1. Serial No. of Scheme
2. Name of Scheme
3. Brief description of Scheme
4. Areas selected for application, if applicable ..
5. Time expected to be taken for execution .. 5 years.
6. Brief details of staff required and how staff Nil.
is proposed to be obtained.
7. Rough estimate of cost at existing rates—

Capital Recurring.		Rs.	
		Rs.	Rs.
1st year	.. ..	52,000	24,000
2nd year	.. ..	Nil.	24,000
3rd year	.. ..	Nil.	24,000
4th year	.. ..	Nil.	24,000
5th year	.. ..	Nil.	24,000
Total	.. ..	52,000	1,20,000

8. Extent to which the Scheme will be productive. Nil.
9. Extent to which the Scheme will cater for returned service personnel. Nil.

10. General description of plant, equipment or stores—	
(i) to be imported from abroad	..
(ii) to be obtained in India	..
11. Labour force required in the case of the larger schemes.	
12. Whether the assistance of Central Government is likely to be required, for obtaining materials, machinery or technical personnel.	Nil.
13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in the succeeding five-year periods.	
14. Any other remarks or information	..

TRAINING OF ORGANIZERS.

Rural Reconstruction work in the villages will be in charge of the organizers as at present. It has been noticed at present that the efficiency of the organizers is very low due to lack of training. It is proposed therefore, that one year's training be given to them before appointment.

Whole Province.

4. Areas selected for application, if applicable. Whole Province.
5. Time expected to be taken for execution 5 years.
6. Brief details of staff required and how staff is proposed to be obtained.
- } Will be borrowed from the Agricultural Department.

7. Rough estimate of cost at existing rates—

			Capital.	Recurring.
			Rs.	Rs.
1st year	..	..	5,700	12,208
2nd year	..	..	Nil.	12,208
3rd year	..	..	Nil.	12,208
4th year	..	..	Nil.	12,208
5th year	..	..	Nil.	12,208
Total	..	..	5,700	61,040

8. Extent to which the scheme will be productive. Nil.
9. Extent to which the scheme will cater for returned service personnel. Nil.

10. General description of plant, equipment or stores—
- (i) to be imported from abroad ..
 - (ii) to be obtained in India ..
11. Labour force required in the case of the larger Schemes.
12. Whether the assistance of Central Government is likely to be required for obtaining materials, machinery or technical personnel.
13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five-year periods.
14. Any other remarks or information ..

10. General description of plant, equipment or stores—
 (i) to be imported from abroad ..
 (ii) to be obtained in India ..
11. Labour force required, in the case of the larger Schemes. Nil.
12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.
13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in the succeeding year periods.
14. Any other remarks or information

General Description of plant, equipment or

1.	Serial No. of Scheme	..	..	65.	
2.	Name of Scheme	..	..	WEEKLY NEWSPAPERS.	
3.	Brief description of Scheme	..	..	A weekly newspaper is a very useful means of propaganda. It can be read by a large number of people. It is the best method of giving publicity to the various undertakings of the Government Departments. A man of ability should be put in-charge. Papers should be distributed free to schools, libraries and all Government offices.	
4.	Areas selected for application, if applicable.			Whole Province.	
5.	Time expected to be taken for execution	..	..	One Year.	
6.	Brief details of staff required and how staff is proposed to be obtained.			One Editor } Will be recruited by advertisement. One Clerk. }	
7.	Rough estimate of cost at existing rates	..	..	Rs.	
	(i) Capital	..	..	217	
	(ii) Recurring for 5 years	..	..	41,765	
8.	Extent to which the Scheme will be productive.				
9.	Extent to which the Scheme will cater for returned service personnel.				
10.	General description of plant, equipment or stores—				
	(i) to be imported from abroad	..	..
	(ii) to be obtained in India	..	..
11.	Labour force required in the case of the larger schemes.				Nil.
12.	Whether the assistance of Central Government is likely to be required, for obtaining equipment, machinery or technical personnel.				
13.	Brief indication, where applicable, of further development contemplated on the lines of the scheme in the succeeding five-year periods.				
14.	Any other remarks or information	..	..

66.
BEE-KEEPING.
1. Serial No. of Scheme
2. Name of Scheme
3. Brief description of the Scheme
4. Areas selected for application, if applicable. Whole Province.
5. Time expected to be taken for execution .. One year.
6. Brief details of staff required and how staff is proposed to be obtained. One Bee Expert.
Five Assistants. (They are already in service).
7. Rough estimate of cost at existing rates—
 (i) Capital Rs. 50,000
 (ii) Recurring for 5 years 30,000
 8. Extent to which the Scheme will be productive—There will be an income of Rs. 950 per year from the sale of honey and beehives.
 9. Extent to which the scheme will cater for returned service personnel.
 10. General description of plant, equipment or stores—
 (i) to be imported from abroad
 (ii) to be obtained in India
 11. Labour force required in the case of the larger schemes.
 12. Whether the assistance of Central Government is likely to be required, for obtaining equipment, machinery or technical personnel. Nil.
 13. Brief indication, where applicable, of further development contemplated on the lines of the scheme in the succeeding five-year periods.
 14. Any other remarks or information

General description of plant, equipment or

67. WIRELESS BROADCASTING.
 Karachi is soon likely to have a broadcasting station of its own. It is proposed to fix 20 radio sets (complete) run by batteries in villages so that the talks and music broadcast from Karachi will be received by villagers. There will be one motor van in charge of an electrician in each District who will go round keeping the radio and battery on in the whole Province.
 Whole Province.
 5 years.
 Eight Electricians.
 Eight Charging Assistants.
 To be recruited by advertisement.

4. Areas selected for application, if applicable.
 5. Time expected to be taken for execution..
 6. Brief details of staff required and how staff is proposed to be obtained.

7. Rough estimate of cost at existing rates—

	Capital. Rs.	Recurring. Rs.
1st year	52,000	8,400
2nd year	52,000	16,800
3rd year	52,000	25,200
4th year	52,000	33,600
5th year	..	33,600
Total ..	2,08,000	1,17,600

8. Extent to which the Scheme will be productive. Nil.
 9. Extent to which Scheme will cater for returned service personnel. Electricians may be recruited from the returned service personnel.

- | | |
|--|--------|
| <p>10. General description of plant, equipment or stores—
 (i) to be imported from abroad ..
 (ii) to be obtained in India ..</p> <p>11. Labour force required in the case of the larger schemes.</p> <p>12. Whether the assistance of Central Government is likely to be required, for obtaining equipment, machinery or technical personnel.</p> <p>13. Brief indication, where applicable, of further development contemplated on the lines of the scheme in the succeeding five-year periods.</p> <p>14. And other remarks or information ..</p> | } Nil. |
|--|--------|

- | | |
|--|---------------|
| <p>10. General description of plant, equipment or stores—
 (i) to be imported from abroad ..
 (ii) to be obtained in India ..</p> <p>11. Labour force required in the case of the larger schemes.</p> <p>12. Whether the assistance of Central Government is likely to be required, for obtaining equipment, machinery or technical personnel.</p> <p>13. Brief indication, where applicable, of further development contemplated on the lines of the scheme in the succeeding five year periods.</p> <p>14. Any other remarks or information ..</p> | <p>} Nil.</p> |
|--|---------------|

General description of plant, equipment or

KEY STATEMENT OF SCHEMES FOR XIV—RURAL UPLIFT AND VILLAGE AMENITIES.

Serial No. of the Scheme.	Description of the Scheme.	Approximate cost of five-year plan in thousands		Category of Schemes namely Special Priority. All Province, etc.	Special remarks, if any.
		Capital.	Recurring		
I	2	3	4	5	6
		Rs.	Rs.		
59	Administrative organisation of the Rural Reconstruction Department.	16	6,24		
60	Village Water Supply	3,79	6,76		
61	Circulating Libraries and Reading Rooms ..	1,17	67		
62	Village Medicine Chests	52	1,20		
63	Training of Organizers	6	61		
64	District Museums	40	59		
65	Weekly Newspapers	Nil.	42		
66	Bee-keeping	50	30		
67	Wireless Broadcasting	2,08	1,18		
68	General programme of village improvement.	1,12,90	37,56		
	Total ..	1,21,58	55,53		
			1,77,11		

All province.

1.	Serial No. of Scheme	..	..	69.	Opening of Training Schools with hostels for Primary Teachers.
2.	Name of Scheme	..	..	..	With a view to accelerate the out-put of trained teachers Government have already made a provision for opening a Training School at Larkana during the year 1945-46 for training 50 teachers in the 1st year course. It is proposed to raise the number to 100 and at the same time to open another Training School at Sukkur for 100 students.
3.	Brief description of Scheme	..	..	..	Sukkur and Larkana.
4.	Areas selected for application, if applicable	..	..	..	It will be enforced immediately.
5.	Time expected to be taken for execution ..	..	..	..	Two Posts of Class II officers in the scale of Rs. 170—400. Three Graduate Assistants in the scale of Rs. 45—175. One Third year trained Primary Teacher (Rs. 50—100). Two Drawing teachers (Rs. 52—133). Two Hindustani teachers, Part-time, Rs. 30 each. Two Physical Instructors, Part-time, Rs. 30 each. One Clerk (Rs. 25—55). Two Naiks (Rs. 21—25). Four Peons (Rs. 16—20). Four Hamals (Rs. 16—20). One Malhi (Rs. 16—20). Three Sweepers (Rs. 16—20). Twelve Cooks (Rs. 16—20).
6.	Brief details of staff required and how staff is proposed to be obtained.	..	..	..	(This excludes the staff provided for training of 50 teachers at Larkana in the Budget Grants for the year 1945-46.) Staff will be obtained by normal recruitment.
7.	Rough estimate of cost at existing rates ..	..	..	..	1st year. Rs. 27,000 2nd year. Rs. 61,000 3rd year. Rs. 61,000 4th year. Rs. 61,000 5th year. Rs. 61,000 Total. Rs. 27,000
	(i) Capital ....	..	..	..	..
	(ii) Recurring ....	..	..	..	..

Returned service personnel will be absorbed if they possess the requisite qualifications.

Nil. Furniture and equipment will be purchased locally.

$$Z = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

As Government have already provided an allotment of Rs. 23,400 recurrent and Rs. 10,700 non-recurrent, the estimate has been reduced as under:—

Rs.		Rs.	
Capital required	.. 38,000	Recurring required	.. 84,000
Capital provided	.. 10,700	Recurring provided	.. 23,400
	<hr/>		<hr/>
	27,300		60,600

The Training School at Sukkur will be located in a rented building. A rented building will be secured for Hostel for Training School at

1. Serial No. of Scheme 70

2. Name of Scheme

3. Brief description of Scheme

Attaching of a Training Class with hostels for the trainees to each of the Government High Schools.

At present there are six Government High Schools at the following places—

- | | |
|-----------------|-----------------|
| (1) Mirpurkhas. | (4) Karachi. |
| (2) Naushahro. | (5) Larkana. |
| (3) Shikarpur. | (6) Tando Bago. |

It is proposed to attach a Training Class to each of the first three High Schools.

So far as the Karachi School is concerned, since the Secondary Training College will be attached to it, it will not be feasible to attach a Training Class for primary teachers.

As there will be a separate Training School (mentioned in Scheme No. 69 at page 267 *ante*.) in the compound of the Government High School, Larkana, it will hardly be desirable to attach another Training Class there.

Tando Bago is a most inconvenient place and no teacher would like to go to that uncongenial place.

Mirpurkhas, Naushahro and Shikarpur.

It will be enforced immediately.

Three Graduate Assistants (Rs. 45—175).

Three Primary Teachers—3rd year trained (Rs. 50—100).

Three Part-time Hindustani teachers

(Rs. 30 per mensem each).

Three Peons (Rs. 16—20).

Six Hamals (Rs. 16—20).

Three Sweepers (Rs. 16—20).

Twelve Cooks (Rs. 16—20).

Staff will be obtained by normal recruitment.

4. Areas selected for application, if applicable...

5. Time expected to be taken for execution ..

6. Brief details of staff required and how staff is proposed to be obtained.

General description of plant, equipment or

7. Rough estimate of cost at existing rates—

(i) Capital	..	..	...	1st year. Rs.	2nd year. Rs.	3rd year. Rs.	4th year. Rs.	5th year. Rs.	Total Rs.
(ii) Recurring	...	..	..	..	..	..	..	..	..

8. Extent to which the Scheme will be productive.

9. Extent to which the Scheme will cater for returned service personnel.

10. General description of plant, equipment or stores—

(i) to be imported from abroad
(ii) to be obtained in India
Labour force required in the case of the larger schemes.

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.

13. Brief indication, where applicable, of further development contemplated on the lines of the scheme in succeeding five-year periods.

14. Any remarks or information

The scheme will produce 150 trained teachers annually.

Returned service personnel will be absorbed if they possess the requisite qualifications.

Nil.

Furniture and equipment will be purchased locally.

Nil.

The buildings for the hostels will have to be hired.

1. Serial No. of Scheme 71.
 2. Name of Scheme Opening of eight Residential Rural Middle Schools with Agricultural and Vocational Bias and Normal Training Schools.
 3. Brief description of Scheme It is proposed to open eight Residential Rural Middle Schools teaching upto Standard IV English with Agricultural and Vocational Bias, and to attach to such schools, Normal Schools giving training for 2 years. Standards I-IV English will serve as Practising Schools. Those of the boys who wish to take to the teaching profession will be admitted to the Training School after passing the P. S. L. C. Examination.

4. Areas selected for application, if applicable..
 5. Time expected to be taken for execution ..
 6. Brief details of staff required for and how staff is proposed to be obtained.

Whole Province—

- It will be executed in the third year.
 Two posts of S. E. S. Class II in the scale of Rs. 170—400.
 Six trained graduates in the scale of Rs. 45—I75.
 Eight 3rd year trained primary teachers in the scale of Rs. 50—100.
 Two Certified Carpentry Instructors knowing English, in the scale of Rs. 57—I50.
 Two Certified Blacksmiths in the scale of Rs. 55—100.
 Six Clerks in the scale of Rs. 25—55, Rs. 80—95, Rs. 95—I25.
 Four Malhis in the scale of Rs. 16—20.
 Forty Cooks in the scale of Rs. 16—20.
 Twenty-two Inferior servants in the scale of Rs. 16—20.
 Four Barbers at Rs. 40 per mensem each.
 Four Washermen at Rs. 40 per mensem each.
 Ten Sweepers in the scale of Rs. 16—20.

Similar staff will be employed in the following years while opening other schools. Staff will be obtained by normal recruitment.

7. Rough estimate of cost at existing rates—

(i) Capital	..	..	..	..	..	..	..	..	..
(ii) Recurring	..	..	..	..	..	..	..	..	..

8. Extent to which the Scheme will be productive.

1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Nil.	Nil.	2,36,000	2,36,000	2,36,000	7,08,000
Nil.	Nil.	1,68,000	3,36,000	5,04,000	10,08,000

The Scheme will produce 800 teachers annually in the fifth year.

General description of plant, equipment or

9. Extent to which the Scheme will cater for returned service personnel. Lower and Technical staff will be recruited from returned service personnel provided they possess requisite qualifications.
10. General description of plant, equipment or stores.—
(i) to be imported from abroad . . . Nil.
(ii) to be obtained in India. . . Building materials, furniture and equipment will be purchased locally.
Masons, Carpenters, Coolies, etc.
11. Labour force required in the case of the larger Schemes
12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel. } Nil.
13. Brief indication, where applicable, of further development contemplated on the lines of the scheme in succeeding five-year periods.
14. Any remarks or information . . . It is proposed to open two Residential Rural Middle Schools each year. During the first year after the War, the two schools may be opened in the following order—
1st Year . . . Thar Parkar and Sukkur Districts.
2nd Year . . . Hyderabad and Larkana Districts.
3rd Year . . . Nawabshah and Dadu Districts.
4th Year . . . Karachi and Upper Sind Frontier Districts.
The institutions will be free boarding schools and all the expenditure on food, clothing, etc., will be met from the Provincial Funds. When the rural middle schools become a *fait accompli* the training school- and training classes referred to in Schemes 69 and 70 will be scrapped.

1. Serial No. of Scheme 72.
2. Name of Scheme Introduction of free and compulsory elementary education in certain areas.
3. Brief description of scheme It is proposed to introduce free and compulsory elementary education for children in 6 talukas during the 3rd year when requisite number of trained teachers will be available. The names of talukas will be selected after consulting the Local Authorities concerned.
4. Areas selected for application, if applicable Six talukas on each occasion.
5. Time expected to be taken for execution The Scheme will be enforced in the third year.
6. Brief details of staff required and how staff is proposed to be obtained. Six Supervisors (Rs. 45—175).
Six Attendance Assistants (Rs. 35—60).
Three hundred and sixty teachers at the rate of sixty teachers per taluka (Rs. 30—50).
Six peons (Rs. 16—20).
Similar staff will have to be added in each of the 4th and 5th years. } The staff will be recruited by normal recruitment.
7. Rough estimate of cost at existing rates
- | | 1st year. | 2nd year. | 3rd year. | 4th year. | 5th year. | Total. |
|----------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| (i) Capital | Nil. | Nil. | 61,000 | 61,000 | 61,000 | 1,83,000 |
| (ii) Recurring | Nil. | Nil. | 2,10,000 | 4,20,000 | 6,30,000 | 12,60,000 |
- 240 villages will be provided with schools in 6 talukas *i.e.*, there will be 720 villages with schools at the end of the fifth year.
8. Extent to which the Scheme will be productive.
9. Extent to which the scheme will cater for returned service personnel. Recruitment will be made from the returned service personnel if they possess requisite qualifications.
10. General description of plant, equipment or stores.—
(i) to be imported from abroad. .. Nil.
(ii) to be obtained in India. .. Furniture and other equipment will be purchased locally.
11. Labour force required in the case of the larger schemes. Nil.

10. General description of plant, equipment or

12.	Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.	Nil.
13.	Brief indication, where applicable, of further development contemplated on the lines of the scheme in succeeding five-year periods.	Further compulsion will be introduced as the number of trained teachers becomes available.
14.	Any remarks or information	The existing Training College for Men, Hyderabad, is sufficient to meet the shortage among the existing trained staff. By opening 2 Training Schools and 3 Training Classes, there will be an output of about 350 1st year trained teachers annually. It is expected that within 3 years, 1,050 teachers are likely to be trained. It will therefore not be difficult to introduce compulsory education in the 6 more talukas during each of the 4th and 5th years.

1.	Serial No. of Scheme	..	..	73.	Expansion of Girls Education.									
2.	Name of Scheme	..	..	..	As there is acute dearth of women teachers in the rural areas, the Local Authorities are not able to open Girls Schools. In order to encourage more girls to pass the P. S. L. C. Examination, it is proposed to give a bonus of Rs. 50 for every successful girl candidate to the Head Master of a Boys Rural School of a locality where there is no Girls School within a radius of one mile. The question of training such girls will be taken in hand only when a sufficient number of girls have taken to the teaching profession. As an experimental measure it will suffice to provide bonus for 20 girls in each district every year.									
3.	Brief description of Scheme	..	..	..	Whole Province.									
4.	Areas selected for application, if applicable..				It may be enforced immediately.									
5.	Time expected to be taken for execution ..				Nil.									
6.	Brief details of staff required and how staff is proposed to be obtained.													
7.	Rough estimate of cost at existing rates—													
	(i) Capital	..	..	..	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.				
	(ii) Recurring	..	..	..	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.				
					Nil.	Nil.	Nil.	Nil.	Nil.	Nil.				
					8,000	8,000	8,000	8,000	8,000	40,000				
8.	Extent to which the Scheme will be productive.				It will produce 800 girls within 5 years who could be employed as teachers.									

10. General description of plant, equipment or

9.	Extent to which the Scheme will cater for re- turned service personnel.	
10.	General description of plant, equipment or stores.— (i) to be imported from abroad. (ii) to be obtained in India.	
11.	Labour force required in the case of the larger schemes.	Nil.
12.	Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.	..
13.	Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five-year periods.	..
14.	Any remarks or information	..

The existing staff in the Training College for Women, Hyderabad, is sufficient to train more teachers. The only difficulty is that there is dearth of suitable candidates particularly from the rural areas.

1.	Serial No. of Scheme	..	..	74.
2.	Name of Scheme	..	..	Taking over of Non-Government Middle Schools by Government, to be raised to High Schools gradually.
3.	Brief description of Scheme	..	..	At present there are no Government High Schools in the Upper Sind Frontier and Dadu districts. The N. J. V. High School at Karachi is more or less intended for the Karachi City; it is therefore necessary to provide facilities for secondary education to the residents of the Karachi District. With this end in view, it is proposed to take over the L. B. Middle School at Kandhkot (Upper Sind Frontier District) and the L. B. Middle School, Sujawal (Karachi District), during the fourth year, and raise them gradually to High Schools.
4.	Area selected for application, if applicable..	..	..	During the following year a Middle High School is proposed to be opened at Dadu, and the L. B. Middle School at Mirpur Mathelo may be taken over by Government. Though there is already a Government High School at Shikarpur, it is at the extremity of the district. Mirpur Mathelo is at the other extremity. There is need for a Government High School there. These institutions will gradually be raised to full-fledged High Schools. The hostels at the 4 places will be provided by the District Local Boards.
5.	Time expected to be taken for execution ..	..	..	Kandhkot, Sujawal, Dadu and Mirpur Mathelo.
6.	Brief details of staff required and how staff is proposed to be obtained.	..	..	The scheme will be enforced in the fourth year. Twelve graduates in the scale of Rs. 45—175. Two Drawing teachers (Rs. 52—133). Two Gymnasts (Rs. 35—80). Two Arabic teachers (Rs. 35—55). Two Clerks (Rs. 25—55). Four Peons etc. (Rs. 16—20).

The additional staff will be employed gradually as and when additional standards are opened, the process of recruitment being normal.

10. General description of plant, equipment or

7. Rough estimate of cost at existing rates—

(i) Capital
(ii) Recurring

Nil.

8. Extent to which the Scheme will be productive.
For inferior staff and gymnasts only.

9. Extent to which the Scheme will cater for returned service personnel.

10. General description of plant, equipment or stores—

(i) to be imported from abroad
(ii) to be obtained in India

Nil.

Furniture, equipment and building materials will be purchased locally.
Masons, carpenters, coolies, etc.

11. Labour force required in the case of the larger schemes.

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.

Nil.

13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five-year periods

14. Any other remarks or information

The schools will be held in rented buildings. The construction of buildings will be taken in hand in the 5th year.

1.	Serial No. of Scheme	..	..	75	Opening of two Middle Schools for Girls to be raised to High Schools gradually.				
2.	Name of Scheme	..	..	..	In order to encourage Secondary Education among girls, Government have adopted a policy of opening every year two Middle Girls Schools to be raised to High Schools gradually. To make a beginning, Government have provided funds for two schools in the budget for the year 1945-46. It is, therefore, proposed to pursue this policy till every district has a Government High School for Girls.				
3.	Brief description of Scheme	..	..	..	Whole Province.				
4.	Areas selected for application, if applicable...	..	..	..	To be enforced immediately.				
5.	Time expected to be taken for execution	..	..	..	Two Head Mistresses (Rs. 100—250).				
6.	Brief details of staff required and how staff is proposed to be obtained.	..	..	..	Four Assistant Mistresses (Rs. 45—175).				
		..	..	..	Two Maid servants (Rs. 16—20).				
		..	..	..	Additional staff will be employed as and when more schools or additional classes are added. The staff will be employed by normal recruitment.				
7.	Rough estimate of cost at existing rates—	..	..	..	1st year.	2nd year.	3rd year.	4th year.	5th year.
	(i) Capital	..	..	..	Rs.	Rs.	Rs.	Rs.	Rs.
	(ii) Recurring	..	..	..	Rs.	Rs.	Rs.	Rs.	Rs.
8.	Extent to which the Scheme will be productive.	..	..	..	Rs.	Rs.	Rs.	Rs.	Rs.
9.	Extent to which the Scheme will cater for returned service personnel.	..	..	..	Rs.	Rs.	Rs.	Rs.	Rs.
10.	General description of plant, equipment or stores—	..	..	..	Rs.	Rs.	Rs.	Rs.	Rs.
	(i) to be imported from abroad.	..	..	..	Rs.	Rs.	Rs.	Rs.	Rs.
	(ii) to be obtained in India.	..	..	..	Rs.	Rs.	Rs.	Rs.	Rs.

o. General description of plant, equipment or

and implements will be required

11. Labour force required in the case of the larger schemes.

Nil.

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.

13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five-year periods.

The Schools opened in the 2nd and 3rd years will have to be raised to High Schools. The construction of buildings will also be taken in hand then.

14. Any other remarks or information

At first the schools will be held in hired buildings till they are well established. The construction of buildings will be taken in hand during the succeeding five-year periods.

1. Serial No. of Scheme 76.
2. Name of Scheme Training of Secondary Teachers.
3. Brief description of Scheme As there is no Training College for Secondary Teachers in this Province, many graduates can ill-afford to go to other provinces for training where they have to spend over Rs. 2,000 in a year. Naturally, they pass the S. T. C. Examination which is only a diploma certificate and is mainly intended for undergraduates. In order to have efficient teachers, it is necessary to open a Secondary Training College for about 30 teachers to begin with. The N. J. V. High School, Karachi, will serve as a practising school. A hostel will be attached to it.
4. Areas selected for application, if applicable Teachers will be recruited from whole province to receive training at Karachi.
5. Time expected to be taken for execution .. The scheme will be enforced immediately.
6. Brief details of staff required and how staff is proposed to be obtained. One post of S. E. S. Class I in the scale of Rs. 300—700. Two posts of Class II in the scale of Rs. 170—400. Two Lecturers in the scale of Rs. 150—300. One Drawing teacher (part-time) at Rs. 50 per mensem. One Physical Instructor (part-time) at Rs. 50 per mensem. The staff will be obtained by normal process of recruitment.
- | | 1st year. | 2nd year. | 3rd year. | 4th year. | 5th year. | Total. |
|--|-----------|-----------|-----------|-----------|-----------|----------|
| One Librarian in the scale of Rs. 40—75. | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. |
| One Clerk in the scale of Rs. 80—95. | 20,000 | Nil. | Nil. | Nil. | Nil. | 20,000 |
| Six Peons in the scale of Rs. 16—20. | 35,000 | 35,000 | 35,000 | 35,000 | 35,000 | 1,75,000 |
- 150 teachers will be trained in 5 years at the rate of 30 per annum.
7. Rough estimate of cost at existing rates—
- (i) Capital
- (ii) Recurring
8. Extent to which the Scheme will be productive.
9. Extent to which the Scheme will cater for returned service personnel.

General description of plant, equipment or stores—

10.

10. General description of plant, equipment or stores—
 - (i) to be imported from abroad .. Nil.
 - (ii) to be obtained in India .. Furniture and equipment will be purchased locally.
11. Labour force required in the case of the larger schemes. .. } Nil.
12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel. }
13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five-year periods. Scheme will be permanent. There will be an additional out-put of 30 trained teachers every year.
14. Any other remarks or information .. The building for the College and the Hostel will have to be hired till a new building for the N. J. V. High School, Karachi, is constructed.

KEY STATEMENT OF SCHEMES FOR XV—EDUCATION.

Serial No. of the scheme	Description of the scheme.	Approximate cost of five year plan in thousands.		Category of scheme, namely, special priority, all provinces, etc.	Special remarks, if any.
		Capital.	Recurring.		
1	2	3	4	5	6
69	Opening of Training Schools with hostels for Primary Teachers.	Rs. 27	Rs. 3 05	Special priority.	
70	Attaching of a training class with a hostel to each of the Government High Schools for trainees.	25	240		
71	Opening of eight Residential Rural Middle Schools with agricultural bias and normal teaching schools.	7,08	10,08	All provinces.	
72	Introduction of free and compulsory elementary education in certain areas.	1,83	12,60		
73	Expansion of Girls' Education	Nil.	40	Special priority.	
74	Taking over of non-Government Middle Schools by Government to be raised to High Schools gradually.	19	101		
75	Opening of two Middle Girls Schools to be raised to High Schools gradually.	90	2,60	Special priority.	
76	Training of Secondary Teachers	20	1,75		
	Total ..	10,72	33,89		
			44,61		

NARRATIVE STATEMENT OF OBJECTIVES OF THE POST-WAR PLAN UNDER XV—"EDUCATION".

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The five-year-plan seeks to tackle education as a whole from primary stage and onwards. The present voluntary system of education has proved not only to be inefficient but also wasteful. Of the 4 per cent. of school-going children nearly 80 per cent. drop off before attaining literacy in any lasting sense. If primary education is to become universal, it must be planned on a compulsory basis. It is, therefore, proposed to substitute the present voluntary system of education by compulsory and free primary education to begin with in selected areas. Realising the advantages of compulsory free primary education, the Government of Sind have, as a matter of fact, already introduced compulsion in primary education. Compulsory free primary education has already been introduced in six talukas and provision has been made to introduce the same in six more talukas in the year 1945-46.

2. Introduction of compulsory free primary education means opening of more primary schools the success of which depends to a very large extent on the number of trained and qualified teachers available to be in charge of these schools. The only practical approach to this question, therefore, is not to rush through the whole scheme at one and the same time but to introduce it by stages in selected areas as and when trained and qualified teachers are available in sufficient numbers. It is accordingly proposed, (i) to open training schools—one at Larkana and the other at Sukkur, and (ii) to attach training classes to Government High Schools at Mirpurkhas, Naushahro and Shikarpur before introducing compulsory education in more talukas. By this scheme about 350 first year trained teachers would be available every year in addition to about 128 trained teachers from the Men's Training College already existing at Hyderabad.

3. Compulsory free primary education is proposed to be introduced only in the third year, when sufficient trained teachers are available, among children between the ages of 6 and 10 years and not to allow them to leave till they have attained permanent literacy. The intention is that they should be taught not only the 3 R's but should also be trained in democratic citizenship. Compulsion would be introduced in six talukas to begin with. These talukas would be selected in consultation with Local Authorities. It is anticipated that within the five-year period compulsory free primary education would be introduced in about 30 talukas, i.e., about half the Province (6 talukas where compulsory free primary education has already been introduced + 6 talukas where compulsion will be introduced during the current year + 18 talukas where compulsory education is proposed to be introduced during the third, fourth and fifth years.) During the latter period of three years about 720 villages are expected to be provided with schools.

4. With the introduction of compulsory free primary education and consequent expansion of primary education the need for opening additional secondary schools will be obvious. However, as the success of these schools also depends upon the number of trained and qualified teachers it is proposed to open a Secondary Teachers Training College in Karachi. At present there is

no such College in Sind and the proposed college would, therefore, meet a long-felt requirement. Facilities in the proposed College would be provided for the training of 30 teachers.

5. The need of girls education has not been overlooked. It is proposed to open two Middle Girls Schools every year, one in each district, to be gradually raised to High Schools. It is anticipated that after a period of about 4 years there would be at least one Girls' High School in each district. In addition to the above, with a view to inducing headmasters of Boys Schools in rural areas where there are no Girls Schools, to enrol girls in their schools, a bonus of Rs. 50 is proposed to be given for each girl student successfully passing the P.S.L.C. Examination. A provision of Rs. 1,000 per district would be made for giving bonus to Head Masters for 20 girls in each district. At this rate within a period of five years about 800 girls would be induced to pass the P.S.L.C. Examination.

6. In order to ensure constant and regular supply of trained teachers after meeting wastage, etc., caused by death, retirement, etc., it is proposed to open in the third year, two Residential Rural Middle Schools every year one in each district, so that during the period of four years, a Rural Middle School could be established in each district for training 100 teachers in the 1st and 2nd year courses, respectively. After some years this arrangement might obviate the need of maintaining the two training schools at Sukkur and Larkana and the three training classes attached to Government High Schools at Mirpurkhas, Naushahro and Shikarpur. It may even be possible to abolish the existing Training College for Men at Hyderabad. In these Rural Middle Schools, the course would be so arranged that in addition to secular education including English, the students would have the option of selecting one of the courses, *viz.*, normal or vocational (technical, industrial and agricultural) training.

7. Attention has also been given to Secondary education and education for Muslims. In Sind Muslims constitute the majority of population but unfortunately they are educationally backward. Though special facilities for their education have been provided by Government but these do not exist in all the districts of Sind. In order to provide these facilities in all districts it is proposed to open two High Schools every year commencing from 4th year or to take over two middle Schools from Local or Private Bodies and gradually to convert them into High Schools. This arrangement is expected to result in at least one Government High School in each District.

8. The plan will cost Rs. 10,72,000 (capital) and Rs. 33,89,550 (recurring) which means a total sum of Rs. 44,61,000 during the course of five years.

XVI.—PUBLIC HEALTH AND MEDICAL SERVICES

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A.—Medical Services.

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1. Serial No. of Scheme 77.
2. Name of Scheme Establishment of a Medical College.
3. Brief description of Scheme It has been accepted on all sides that there should be only one registrable qualification for students of scientific medicine which would be of the standard of University Degree *viz.*, M. B. B. S. This object has been achieved by converting the existing Medical School, Hyderabad, into a Medical College named as the Dow Medical College.
4. Areas selected for application, if applicable. Karachi.
5. Time expected to be taken for execution Already executed.
6. Brief details of staff required and how staff is, proposed to be obtained.
 - i. *Professorial*—
 - (i) One Principal (part-time).
 - (ii) One Assistant Principal (part-time.)
 - (iii) Eight Professors.
 - (iv) Nineteen Assistant Professors and Lecturers.
 - (v) Fifteen Demonstrators.
 2. *Office Establishment (Clerical)*—
 - (i) One Office Superintendent.
 - (ii) One Accountant.
 - (iii) One Senior Clerk.
 - (iv) Five Junior Clerks.
 - (v) One Artist.
 - (vi) Laboratory Assistants and other inferior staff.

Staff will be obtained by the normal process of recruitment and promotion.

7. Rough estimate of cost at existing rate

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.	Remarks.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
(i) Capital ..	12,10,600*	2,50,000@	2,50,000@	Nil.	Nil.	17,10,600	*Represents the cost of following buildings :—
(ii) Recurring ..	1,06,428	1,06,428	2,15,300	2,15,300	2,15,300	8,58,756	(a) Main College Building .. 6,00,000 (b) Hostel Building .. 4,15,600 (c) Quarters for the teaching staff .. 1,25,000 (d) Quarters for the servants .. 70,000
						Total	→ 12,10,600
							@ Represents the cost of additional equipment.

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8. Extent to which the Scheme will be productive. It is expected that approximately a sum of Rs. 60,000 will be realized per annum after the working of the full-fledged College.
9. Extent to which the Scheme will cater for returned service personnel. Such members of the returned service personnel as possess the requisite qualifications will be absorbed.
10. General description of plant, equipment or stores—
 (i) to be imported from abroad, Instruments and appliances.
 (ii) to be obtained in India Nil.
11. Labour force required in the case of the larger schemes. Nil.

General description of plant, equipment or
of tractors and implements will be required

10.

Yes. For obtaining priority in the case of equipment not obtainable in India.

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.

Nil.

13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.

14. Any other remarks or information.

The College has already started working from June 1945, at Hyderabad, and, will be shifted to Karachi as soon as the construction of buildings, etc., is completed.

1. Serial No. of Scheme

2. Name of Scheme

3. Brief description of Scheme

78.

Organization of the office of the Inspector-General of Civil Hospitals, Sind.

The planning and execution of the numerous schemes of Medical Department dealt with in this plan will involve an immense increase in the work of Head Office. It would be beyond the capacity of a single Inspector-General of Civil Hospitals to exercise effective supervision and control over the expanded medical services aimed at in these schemes. It is therefore, necessary that the Inspector-General of Civil Hospitals should have a Deputy Inspector-General of Civil Hospitals of the I. M. S. cadre and a Superintendent of Nursing Services (Gazetted) to assist him in technical and administrative matters. For the same reasons the office of the Inspector-General of Civil Hospitals will also require to be strengthened and the following minimum staff will be required, to deal with the extra work:—

Gazetted.—

- (i) One Deputy Inspector-General of Civil Hospitals, Sind, (Scale of I.M.S. Officers).
- (ii) One Superintendent of Nursing Services to be attached to the office of Inspector-General of Civil Hospitals, Sind Rs. 400—25—700.

Non-Gazetted—

- (i) One Senior Superintendent (Office) .. Rs. 300—25—350—E.B.—25—450.
- (ii) Two Deputy Superintendents (Office) for Rs. 200—10—300 each administrative and miscellaneous work

10. General description of plant, equipment or
 Rs. 180-10-260.
 Rs. 80-7-150-10-200
 Rs. 50-4-90-5-130
 each.
 Rs. 75-5-140.

(iii) One Assistant Superintendent of Accounts.
 (iv) Two Senior Assistants
 (v) Four Junior Assistants
 (vi) One Whole-time Stenographer

Karachi.

4. Areas selected for application, if applicable.

5. Time expected to be taken for execution ... Five years.

6. Brief details of staff required and how staff is proposed to be obtained.
 As shown against item No. 3 above. To be obtained by the normal process of recruitment.

7. Rough estimate of cost at existing rates—

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.	Remarks.
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(i) Capital	Rs. 2,000	Rs. 1,000	Rs. Nil.	Rs. Nil.	Rs. Nil.	Rs. 3,000	*Represents cost of furniture.
(ii) Recurring	Rs. 35,856	Rs. 53,640	Rs. 58,240	Rs. 58,240	Rs. 58,240	Rs. 2,64,216	

8. Extent to which the Scheme will be productive. Nil.

9. Extent to which the Scheme will cater for returned service personnel.
 Such of the ex-servicemen as possess the requisite qualifications, will be absorbed.

10. General description of plant, equipment or stores—
 (i) to be imported from abroad, Nil.
 (ii) to be obtained in India.
 Labour force required in the case of the larger Schemes.

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.
13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.
14. Any other remarks or information.
- Yes, in making available one I. M. S. Officer, for appointment as Deputy Inspector-General of Civil Hospitals.
- Nil.
- (a) The appointment of the Deputy Inspector-General of Civil Hospitals should be made during the first year of the Five-year plan or as soon as an I.M.S. Officer becomes available.
- (b) The appointment of Superintendent of Nursing Services (Gazetted) should be made from 1st April 1945 as the scheme for the establishment of Nursing School is to be introduced immediately.
- (c) The clerical staff that would be required immediately to work out further details of the schemes so as to be ready to launch first year Programme, is as under :—
 One Senior Superintendent
 One Junior Superintendent
- (i) It is considered that the work of this comprehensive nature requires collection of a considerable amount of data and other ancillary information to evolve satisfactory programme as envisaged in the schemes. As a preliminary step, it is considered essential that the office of the Inspector-General of Civil Hospitals should have adequate and efficient staff without which it is not possible to attain any visible or measureable results. It is therefore recommended that Government should create immediately a post of Senior Superintendent in the grade of Rs. 300—25—350—E.B.—25—450, and the present scale of pay of the post of the Superintendent in the grade of Rs. 180—10—260 revised as above and designated as Deputy Superintendent.
- (ii) The appointments of the remaining staff will be made as and when necessary.

79. Establishment of a Medical Engineering Department.

Designing and construction of hospital buildings is a specialised job for which specially trained engineers are necessary. In view of the magnitude of the Building projects proposed in the Plan, it is necessary to create a special Medical Engineering Department to supervise the construction of Hospitals and Dispensaries, and to help and advise the Inspector-General of Civil Hospitals in the preparation of suitable plans and estimates on modern lines. The Department should consist of one Executive Engineer with the necessary complement of Overseers, Draftsmen, etc.

The Headquarters of the new Department will be at Karachi, and it may be attached to the Inspector-General of Civil Hospitals, Sind.

The Chief Engineer in Sind or the Superintending Engineer, Public Works Department. Buildings and Roads Branch should act as Technical Adviser. The activities of the Department will however extend over the whole Province.

Five years.

One Executive Engineer, two Assistant Engineers, three Draftsmen, two Overseers, three Peons, three Servants and seven Clerks.

This staff will be obtained in consultation with the Public Works Department.

7. Rough estimate of cost at existing rates.

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
(i) Capital	Nil	Nil	Nil	Nil	Nil	Nil
(ii) Recurring	58,000	58,000.	58,000	58,000	58,000	2,90,000

4. Areas selected for application, if applicable.

5. Time expected to be taken for execution ..

6. Brief details of staff required and how staff is proposed to be obtained.

- | | | |
|-----|--|---|
| 8. | Extent to which the Scheme will be productive. | Nil. |
| 9. | Extent to which the Scheme will cater for returned service personnel. | Suitable demobilized personnel can be absorbed. |
| 10. | General description of plant, equipment or stores—
(i) to be imported abroad,
(ii) to be obtained in India. | |
| 11. | Labour force required in the case of the larger schemes. | |
| 12. | Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel. | Nil. |
| 13. | Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods. | |
| 14. | Any other remarks, or information. | |

- (1) The details of this scheme will have to be worked out in consultation with the Public Works Department.
- (2) As the Construction work of most of the Buildings is to be started early, it is very important that this Scheme should be introduced immediately.

Establishment of Central Preliminary School for Nurses.

For the future planning of Nursing Staff in the Province, arrangements will have to be made to obtain 300 nurses and to keep on training more, to meet the increasing demand for Nursing in the Province. It is therefore, proposed to start this School for giving about 3 months elementary training in nursing and social service to 60 student nurses, before they are drafted to the training institutions for the full training (15 students for each course of 3 months). The advantages of this training are—

- (a) unsuitable candidates will be weeded out in the very beginning, and
- (b) with special qualified teaching staff at the School, the students will get better basic nursing education.

Whole Province.

It is proposed to start the Scheme immediately.

- (i) One Superintendent of Nursing Services in the scale of Rs. 400—25—700.
- (ii) One Senior Sister Tutor in the scale of Rs. 200—10—250.
- (iii) One 2nd Assistant Sister Tutor in the scale of Rs. 150—5—200,

with free furnished accommodation, messing, uniform and dhobi allowance.

In addition, lectures are also to be delivered by Medical Officers on diseases, such as Gynaecology, Eye Diseases, Ear, Nose and throat, Skin and Venereal Diseases. The extra allowance required to be given will also come to Rs. 50 per mensem each. Staff will be obtained by the normal process of recruitment.

1. Serial No. of Scheme
2. Name of Scheme
3. Brief description of Scheme
4. Areas selected for application, if applicable.
5. Time expected to be taken for execution
6. Brief details of staff required and how staff is proposed to be obtained.

7. Rough estimate of cost at existing rates—

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.	Remarks.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
(i) Capital ..	*1,50,000	Nil.	Nil.	Nil.	Nil.	1,50,000	*Represents the cost of Building and equipment and furniture for the School.
(ii) Recurring ..	29,108	34,508	39,908	45,308	48,008	1,96,840	

8. Extent to which the Scheme will be productive. Nil.

9. Extent to which the Scheme will cater for returned service personnel.

Such of the ex-service men as possess the requisite qualifications will be absorbed.

10. General description of plant, equipment or stores—

(i) to be imported abroad,

Nil.

(ii) to be obtained in India.

Furniture and fittings.

11. Labour force required in the case of the larger schemes.

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.

Nil.

13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.

14. Any other remarks or information.

- 81.
1. Serial No. of Scheme ..
 2. Name of Scheme ..
 3. Brief description of Scheme ..
- Extension of existing hospital buildings.
- For a population of 45,35,000, the province has a total number of 1,240 beds. This works out to 1 bed per 3,657 of the population which is quite inadequate. An increase in the number of beds by extending the existing hospitals is an urgent need. It is accordingly proposed to provide 1,000 extra beds at the District Civil Hospitals.

Construction of :—

Estimated cost.
Rs.

(a) Upper storey on the Medical Ward of the Civil Hospital, Hyderabad, Store rooms and Eye Department.	85,000
(b) Private Wards at Hyderabad ..	30,000
(c) Maternity Ward at Hyderabad ..	22,000
(d) Sceptic Maternity Ward at Hyderabad ..	11,000
(e) Extension of the Civil Hospital, Karachi ..	9,50,000
(f) Extension of the Civil Hospital, Mirpurkhas	1,00,000
(g) Extension of the Civil Hospital, Nawabshah	1,00,000
(h) Extension of the Civil Hospital, Dadu ..	70,000
	(See remarks against item 14 below.)

Total .. 13,68,000

4. Areas selected for application, if applicable.. Hyderabad, Karachi, Mirpurkhas, Nawabshah and Dadu.

5. Time expected to be taken for execution .. Five years

6. Brief details of staff required and how staff is proposed to be obtained. Nil.

7. Rough estimate of cost at existing rates .. The total expenditure shown against item No. 3 above is distributed between the five years as follows:—

	1st year.	2nd year.	3rd year.	4th year	5th year.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
(i) Capital ..	9,50,000	1,04,500	1,04,500	1,04,500	1,04,500	13,68,000
(ii) Recurring ..	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.

8. Extent to which the Scheme will be productive. Some income will accrue from the paying in-door patients to be admitted in the expanded accommodation.

9. Extent to which the Scheme will cater for returned service personnel. Nil.

10. General description of plant, equipment or stores—

(i) to be imported from abroad Nil.

(ii) to be obtained in India Furniture and equipment.

11. Labour force required in the case of the larger schemes. Labour will be available locally.

12. Whether the assistance of the Central Nil.

Government is likely to be required for obtaining materials, machinery or technical personnel.

13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.
14. Any other remarks or information
- Nil.
- (a) Public Works Department will no doubt employ suitable de-mobilized personnel in connection with the construction of these Buildings.
- (b) The extensions to the Civil Hospital, Karachi, *vide* Item No. 3 (e) above come under Special Priority Scheme. The priority with regard to other items will be determined later.

1. Serial No. of Schem

2. Name of Scheme

3. Brief description of Scheme

4. New Building Projects.

It is proposed to take up the following new projects :—
Work. Estimated cost.
Rs.

- (a) Construction of additional Nurses quarters at the Civil Hospital, Karachi 2,50,000
- (b) Construction of Residential quarters for the District Medical Officer at Dadu. 25,000
- (c) Construction of Subsidiary Buildings at Dadu. 1,00,000
- (d) Construction of staff quarters for Medical Officers, Compounders, Clerks and other inferior staff, at Dadu. 2,00,000
- (e) Do. at Mirpurkhas 1, 50,000
- (f) Residential quarters for District Medical Officer, Nawabshah. 25,000
- (g) Residential quarters for Medical Officers, Compounders, Clerks and other inferior staff, Nawabshah. 50,000
- (h) Extra Quarters for the staff at Hyderabad. 1,50,000
- (i) Extra Quarters for the staff at Karachi * 4,00,000.
- (j) Extra Quarters for the staff, Larkana and Jacobabad, (at Rs. one lakh each). 2,00,000

*Correlated with Medical College Scheme. (No. 77)

- Rs.
1,50,000
- (k) New Buildings for the office of the Inspector-General of Civil Hospital. The office is at present accommodated in the N. J. V. High School Buildings which will require to be vacated when further extensions to Civil Hospital are made. 4,00,000
- (l) Construction of a T.B. Sanatorium with 100 beds. Place to be selected later. *1,50,000
- (m) Construction of Buildings for Central Laboratory. *Co-related with Medical College Scheme. (No. 77)
- (n) Construction of Buildings for Medical Stores Depot, Sind. 1,00,000

Total .. 23,50,000

4. Areas selected for application, if applicable.. All Province.
5. Time expected to be taken for execution .. To be taken up after war.
6. Brief details of staff required and how staff - Nil. is proposed to be obtained.
7. Rough estimate of cost at existing rates—

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.
(i) Capital ..	Rs. 4,70,000	Rs. 4,70,000	Rs. 4,70,000	Rs. 4,70,000	Rs. 4,70,000	Rs. 23,50,000
(ii) Recurring ..	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.

- | | | |
|-----|--|---|
| 8. | Extent to which the Scheme will be productive. | Partially productive of revenue. |
| 9. | Extent to which the Scheme will cater for returned service personnel. | Public Works Department will be able to employ some of the demobilized personnel. |
| 10. | General description of plant, equipment or stores— | |
| | (i) to be imported from abroad | Nil. |
| | (ii) to be obtained in India | Furniture and equipment. |
| 11. | Labour force required in the case of the larger schemes. | |
| 12. | Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel. | Nil. |
| 13. | Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods. | |
| 14. | Any other remarks or information. | The relative priority of these works can be determined later when more detailed planning is taken up. |

Training of Midwives.

The training of Assistant Midwives is carried on at present at Hyderabad, Karachi, Dufferin Hospital and Sukkur under the auspices of the Lady Graham Improvement and Village Uplift Scheme and the Red Cross Society. The number of qualified midwives in this Province is extremely small and it is intended that at least one Midwife should be attached to each Rural Dispensary and adequate number should be trained to settle down in towns and villages in the Province. It is estimated that to begin with, training facilities for 500 women should be provided. The Training Centres at Hyderabad and Sukkur will therefore, require to be extended and extra staff appointed to undertake the training of at least 100 midwives in each year (50 at each centre). As the need for skilled assistance in Midwifery cases especially in rural areas is very great, it is proposed that Government should subsidise considerably the existing Training Centres and help the Red Cross Society to provide another Centre in Karachi to intensify the training and provide Government Staff to do the work.

Hyderabad, Sukkur and Karachi.

Immediately.

Details will be worked out later.

4. Areas selected for application if applicable..

5. Time expected to be taken for execution ..

6. Brief details of staff required and how staff is proposed to be obtained.

7. Rough estimate of cost at existing rates.

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.	Remarks.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
(i) Capital ..	*2,00,000	Nil.	Nil.	Nil.	Nil.	2,00,000	*Represents the cost of Hostels and Servants' quarters.
(ii) Recurring ..	†44,000	44,000	44,000	44,000	44,000	2,20,000	†Details are as under :—
							Rs.
							(a) Scholarships to 100 students at Rs. 20 per mensem each. 24,000
							(b) Staff 15,000
							(c) Contingencies 5,000
							44,000

8. Extent to which the Scheme will be productive.

9. Extent to which the Scheme will cater for returned service personnel.

10. General description of plant, equipment or stores—

- (i) to be imported from abroad,
(ii) to be obtained in India.

Nil.

11. Labour force required in the case of the larger schemes.

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.

Nil.

13 Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.

14. Any other remarks or information ..

(a) Full details of this Scheme are being worked out. It is proposed that the construction work of Hostel may be taken up in first year of the First five year plan.

(b) Each trained Midwife will be required to sign a bond under taking to serve for a period of 5 years and will be allowed private practice only when Government demands are fulfilled.

1. Serial No. of Scheme 84
2. Name of Scheme Creation of a cadre of Technicians for X-Ray and Laboratory work.
3. Brief description of Scheme There are no trained Technicians for X-Ray and Laboratory work in this Province. In the United Kingdom, this work is done by trained men. With the development of X-Ray Departments at each Hospital and the opening of the Pathological Laboratories, it is proposed to create a cadre of such Technicians, twelve X-Ray and twenty Laboratory Technicians. Graduates in Science or those with Inter Science qualifications will be selected for this purpose and given training at Government expense. Stipends of Rs. 50 will be given to the candidates during the period of training. This scheme would be helpful particularly in meeting the demand for Laboratory Assistants for the Medical College, Sind, as no trained hands are available locally.

4. Areas selected for application, if applicable.. Whole Province.

5. Time expected to be taken for execution .. Immediately after the War.

6. Brief details of staff required and how staff is proposed to be obtained.

(i) Two Head X-Ray Technicians ..	Rs. 120—8—200.
(ii) Ten X-Ray Technicians ..	Rs. 75—5—120.
(iii) Eight Head Laboratory Technicians, ..	Rs. 120—8—200.
(iv) Twelve Laboratory Technicians ..	Rs. 75—5—120.

Staff will be obtained by recruitment by advertisement.

7. Rough estimate of cost at existing rates—

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.
(i) Capital ..	Rs. Nil.	Rs. Nil.	Rs. Nil.	Rs. Nil.	Rs. Nil.	
(ii) Recurring ..	11,760	18,600	25,440	32,280	34,260	1,22,340

- | | |
|--|--|
| 8. Extent to which the Scheme will be productive. | To a small extent. |
| 9. Extent to which the Scheme will cater for returned service personnel. | Suitable demobilized personnel with requisite qualifications will be absorbed. |
| 10. General description of plant, equipment or stores—
(i) to be imported from abroad,
(ii) to be obtained in India. | <div style="text-align: center;"> <div style="display: inline-block; width: 100px; height: 100px; border-left: 1px solid black; border-right: 1px solid black; border-bottom: 1px solid black; margin: 0 auto;"></div>
 Nil. </div> |
| 11. Labour force required in the case of the larger schemes. | |
| 12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel. | |
| 13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods. | |
| 14. Any other remarks or information | <p>Laboratory Technicians will be trained at the Haffkine Institute, Bombay, and X-Ray Technicians at the Gokaldas Tejpal Hospital, Bombay.</p> <p>The stipendiary students will be required to sign a bond to serve Government for a period of at least 5 years after training or else refund to Government the amount of tuition fee and the stipends received.</p> <p>Eight Technicians in X-Ray and six in Laboratory work will be trained in the 1st year of Five year plan.</p> <p>The remaining will be trained according to the plans in subsequent years.</p> |

1. Serial No. of Scheme ... 85.
2. Name of Scheme ... Strengthening of Hospital Staff.
3. Brief description of Scheme ... The existing staff at the Civil Hospitals is inadequate even for the present needs. Their expansion will involve much extra work, and in the interests of efficiency of the institutions, it is necessary to strengthen the staff.
4. Areas selected for application, if applicable... The whole Province.
5. Time expected to be taken for execution .. Immediately.
6. Brief details of the staff required and how staff is proposed to be obtained. As mentioned in the statement printed at page 309 *post*.
.. Staff will be obtained by promotion and recruitment.
7. Rough estimate of cost at existing rates ..

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.
(i) Capital	Rs. Nil.	Rs. / Nil.	Rs. Nil.	Rs. Nil.	Rs. Nil.	Rs. Nil.
(ii) Recurring	1,33,980	2,67,960	4,01,940	5,35,920	6,69,900	20,09,700
8. Extent to which the Scheme will be pro- ductive.	Nil.					

9. Extent to which the Scheme will cater for returned service personnel. Suitable demobilized personnel with requisite qualifications can be absorbed.

10. General description of plant, equipment or stores—

- (i) to be imported from abroad,
- (ii) to be obtained in India.

11. Labour force required in the case of larger schemes.

12. Whether the assistance of the Government is likely to be required for obtaining materials, machinery or technical personnel.

13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.

14. Any other remarks or information.

The appointment of the staff will be arranged so as to keep pace with the expansion of hospitals.

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STATEMENT SHOWING THE DETAILS OF STAFF REQUIRED
FOR SCHEME NO. 85.

————— 0 —————
(Item No. 6 of the Scheme).
————— 0 —————

<i>Designation.</i>	<i>No. of posts.</i>
Indian Medical Service Officer	1
Sind Medical Service Class I.	1
Sind Medical Service Class II.	8
Sind Subordinate Medical Service Officers (including lady doctors).	20
Stewards	7
Almoners	3
Clerks	9
Dressers	8
Operation Room attendants	8
Nursing Staff	250
Tailors	3
Male and Female servants	167
Dispensary servants	16
Laboratory Assistants	8
Peons	8
Cooks	24
Dhobis	26
Malhis	4
Male and Female Sweepers	84
Chowkidars	18
Barbers	2
Hamals	20
Odd job men	7
Midwives	16
Store Boys	8

86.

1. Serial Number of Scheme --
 2. Name of Scheme --
 3. Brief description of Scheme ..
- : : : : :
: : : : :
: : : : :
- Institutions of Honorary Medical Officers.
At present there is a great apathy on the part of the private medical practitioners to accept the posts of Honorary Medical Officers at District Head: Quarter Hospital, the reason obviously being that there is no remuneration attached to these posts. With a view to encouraging the institution of suitably qualified Medical Practitioners, it is proposed that those specially trained in different branches of medicines and surgery should be given an honorarium of Rs. 100 per mensem.

4. Areas selected for application, if applicable... Whole Province.
5. Time expected to be taken for execution... Immediately after the War.

6. Brief details of staff required and how Staff Eight Medical men will be required every year.
is proposed to be obtained.

7. Rough estimate of cost at existing rates --

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
(i) Capital ..	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.
(ii) Recurring ..	9,600	19,200	28,800	38,400	48,000	1,44,000

8. Extent to which the Scheme will be productive. Nil.

9. Extent to which the Scheme will cater for returned service personnel. Suitable candidates from the demobilized personnel will be absorbed.

10.	General description of plant; equipment or stores— (i) to be imported from abroad, (ii) to be obtained in India.	Nil.
11.	Labour force required in the case of the larger schemes.	
12.	Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.	
13.	Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.	
14.	Any other remarks or information.	

1. Serial No. of Scheme. 87.
2. Name of Scheme Establishment of additional Dispensaries in Rural Areas and taking over of the Local Bodies Dispensaries.

3. Brief description of Scheme.— This is one of the many schemes for the extension of medical relief in rural areas. The existing number of outlying dispensaries is 107. It is proposed to open forty new Dispensaries in the Province, eight in each year. These dispensaries will be mainly for out patients and will not have more than eight beds in each. It is also proposed to take over under the management of Government the non-aided Dispensaries of Districts Local Boards, and also the aided Dispensaries of the District Local Boards and Municipalities.

4. Areas selected for application, if applicable.. Whole Province.
5. Time expected to be taken for execution. Immediately.
6. Brief details of staff required and how staff is proposed to be obtained. Medical Officers, Compounders, Dressers and Ward-servants, etc. From amongst demobilized Military personnel to the extent possible ; rest by recruitment.

9. Rough estimate of cost at existing rates .

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
(i) Capital ..	9,19,000	4,73,500	4,21,000	4,24,000	4,24,000	26,64,500
(ii) Recurring ..	5,44,100	7,31,100	8,01,900	8,60,300	9,39,200	38,76,600

8. Extent to which the Scheme will be productive: A small part of the recurring cost would be recoverable in the form of charges from well-to-do patients.
9. Extent to which the Scheme will cater for returned service personnel. Suitable demobilized personnel with requisite qualifications will be preferred.

10. General description of plant, equipment or stores—

(i) to be imported abroad,

(ii) to be obtained in India.

Nil.

Equipment will be obtained from the Military Departments to the extent possible, and the remaining, locally.

11. Labour force required in the case of the larger schemes.

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.

Nil.

13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.

14. Any other remarks or information.

The estimates of cost given against item No. 9 have been worked out on the following basis :—

(1) Capital cost of Buildings at Rs. 50,000 per dispensary.

(2) Non-recurrent grant to each dispensary at Rs. 1,500 for existing Dispensaries, and at Rs. 3,000 for each new one.

(3) Recurring cost at Rs. 6,000 per annum for each.

Although this scheme is included in the Post-War Schemes, it is proposed that the first year programme as envisaged above should be launched from the financial year 1945-46.

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1. Serial No. of Scheme Conversion of Dispensaries into Rural Hospitals.
2. Name of Scheme With a view to improving the Medical facilities in rural areas, it is proposed to convert 16 Dispensaries into Rural Hospitals. These Rural Hospitals will provide a co-ordinating link between the rural dispensaries on one hand and the District Headquarter hospitals on the other. Sixteen Rural Hospitals are to be opened in the Province, four each year of the first four years of the five year period.
3. Brief description of Scheme

Whole Province.

4. Areas selected for application, if applicable... After the War.
5. Time expected to be taken for execution. (i) Sixteen Sind Medical Service Class II officers.
6. Brief details of the staff required and how staff is proposed to be obtained. (ii) Sixteen Assistant Medical Officers.
(iii) Sixteen Lady Doctors.
(iv) Sixteen Nurses and sixteen Female Ward Servants.
(v) Sixteen Midwives

By recruitment from demobilized personnel as well as from other sources.

7. Rough estimate of cost at existing rates.—

	1st year.		2nd year.		3rd year.		4th year.		5th year.		Total.	Remarks.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
(i) Capital	..	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	For each dispensary to be converted into Rural Hospital, extensions will be necessary.
(ii) Recurring	..	35,136	35,136	35,136	35,136	35,136	35,136	35,136	35,136	1,75,680		

8. Extent to which the Scheme will be productive. A small income will accrue by way of Hospital fees from patients.
9. Extent to which the Scheme will cater for returned service personnel. From demobilised personnel to the extent possible.
10. General description of plant, equipment or stores—

(i) to be imported from abroad

}

(ii) to be obtained in India

The hospital equipment will be obtained from the Military Hospitals as far as possible.
11. Labour force required in the case of the larger schemes. Labour will be available locally.
12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel. Yes, *vide* item No. 10 above.
13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods. Nil.
14. Any other remarks or information .. The Dispensaries of Local Bodies are to be selected for conversion into Rural Hospitals but these Rural Hospitals will be entirely controlled by the Government, and for that purpose, an amount equal to the expenditure incurred at present on the dispensaries concerned by the Local Bodies will be recovered from them.

1.	Serial No. of Scheme	89.	Re-construction of Hospital Buildings.
2.	Name of Scheme		A number of Buildings in which the existing hospitals are housed do not meet the requirements of to-day, or provide for an easy expansion. The structures that need new buildings or re-modelling are as follows:—
3.	Brief description of Scheme		Estimated cost. Rs.
		(a)	Construction of New Civil Hospital, Sukkur (including subsidiary Buildings). 5,50,000
		(b)	Complete re-modelling of Civil Hospital, Larkana. 4,00,000
		(c)	Complete re-modelling of Civil Hospital, Jacobabad. 2,50,000
		(d)	Construction of a New Out-patient Department at Civil Hospital, Karachi. * 2,00,000 * Correlated with Medical College Scheme (No. 77).
		(e)	Construction of a New Out-patient Department at Civil Hospital, Hyderabad. 1,09,000
			Total .. 15,09,000
4.	Areas selected for application, if applicable...		Karachi, Hyderabad, Sukkur, Larkana and Jacobabad.
5.	Time expected to be taken for execution ...		Two years.
6.	Brief details of staff required and how staff is proposed to be obtained.		Nil.

7. Rough estimate of cost at existing rates :—

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.
(i) Capital	Rs. 7,50,000	Rs. 7,59,000	Rs. Nil.	Rs. Nil.	Rs. Nil.	Rs. 15,09,000
(ii) Recurring	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.

8. Extent to which the Scheme will be pro- Nil.
ductive.9. Extent to which the Scheme will cater for Nil.
returned service personnel.10. General description of plant, equipment
or stores—(i) to be imported from abroad,
(ii) to be obtained in India.

Nil.

Furniture and equipment will be obtained from the Military Department, as far as possible.

11. Labour force required in the case of the Nil.
larger schemes.12. Whether the assistance of the Central Yes.
Government is likely to be required for
obtaining materials, machinery or techni-
cal personnel.13. Brief indication, where applicable, of further Nil.
development contemplated on the lines
of the Scheme in succeeding five year
periods.

14. Any other remarks or information

Public Works Department will employ suitable demobilized personnel in
connection with the construction of these Buildings.The construction work for items 3 (a) and 3 (d), should be taken in the 1st
year and of items 3 (b), 3(c) and 3(e) should be taken in the 2nd year of
the First five-year plan.

1.	Serial No. of Scheme	...	90.	Improvement to the existing Hospital Buildings.	
2.	Name of Scheme	...		Some of the existing Hospitals require minor repairs to floors, extension of kitchens, Sanitary and bathing arrangements and provision of fans, etc.	
3.	Brief description of Scheme	...		The required items of improvements with estimated cost are given below:—	

	Estimated cost. Rs.
(a), Re-construction of floors and dados and other similar improvements in all hospitals with the exception of those to be re-constructed.	50,000
(b) Improvements of existing kitchens, Bath Rooms and construction of Dining Rooms.	20,000
(c) Provision of Electric fans at hospitals where these are not provided.	10,000
(d) Provision of Underground Drainage and Sceptic Tanks at Hyderabad, Mirpurkhas (including Larkana, Jacobabad and Sukkur which are to be re-constructed) approximately Rs. 30,000 each.	1,50,000

Total ... 2,30,000

Whole province.

Five years.

Nil.

4. Areas selected for application, if applicable
5. Time expected to be taken for execution...
6. Brief details of staff required and how staff is proposed to be obtained.
7. Rough estimate of cost at existing rates—

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.
(c) Capital	Rs. 46,000	Rs. 46,000	Rs. 46,000	Rs. 46,000	Rs. 46,000	Rs. 2,30,000
					Nil.	Nil.

8. Extent to which the Scheme will be productive. } Nil.
9. Extent to which the Scheme will cater for returned service personnel. }
10. General description of plant, equipment or stores—
 - (i) to be imported from abroad, Motor Pumps
 - (ii) to be obtained in India. Sanitary fittings, Tiles, etc.
11. Labour force required in the case of the Nil. larger schemes.
12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel. Yes.
13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods. } Nil.
14. Any other remarks or information— .. }

1. Serial No. of Scheme 91.
Establishment of Pathological Laboratories.
2. Name of Scheme ..
..
3. Brief description of Scheme.
.. With the advance of the medical science, pathological examination of Clinical material has become more and more essential. At present there is only a small Laboratory attached to the Civil Hospital, Karachi, and the Laboratory which is attached to the Medical School, Hyderabad, does the work for the Civil Hospital, Hyderabad. The remaining hospitals have very little equipment to do specific tests for certain diseases, *e.g.*, Syphilis. It is therefore, important that each hospital should have a fairly well equipped Laboratory and a Medical Officer trained in Laboratory work attached to it.

4. Areas selected for application, if applicable... Whole Province.

5. Time expected to be taken for execution .. In the second year of the First five-year plan.

6. Brief details of staff required and how staff is proposed to be obtained. (a) Seven Sind Subordinate Medical Service Officers.

(b) Seven Laboratory servants.

(c) Seven Sweepers.

To be recruited from suitable demobilized personnel and by direct recruitment.

7. Rough estimate of cost at existing rates.

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.	Remarks.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
(i) Capital ..	*40,000	Nil.	Nil.	Nil.	Nil.	40,000	* Represents the cost of additions and alterations to the buildings of Civil Hospitals.
(ii) Recurring ..	Nil.	25,500	25,500	25,500	25,500	1,02,000	

Some income will accrue in the shape of fees realized from paying patients for pathological examinations.
 Suitable demobilized medical Officers with experience in Pathology can be employed under this scheme as also Laboratory servants.

8. Extent to which the Scheme will be productive.
9. Extent to which the Scheme will cater for returned service personnel.
10. General description of plant, equipment or stores—
 - (i) to be imported from abroad,
 - (ii) to be obtained in India.

Nil.

Equipment and instruments will be purchased from the Military Departments to the extent possible. Balance will be purchased from the local market.

Nil.

11. Labour force required in the case of the larger schemes.

Yes.

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.

Nil.

13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.
14. Any other remarks or information—

- 92.
1. Serial No. of Scheme
 2. Name of Scheme
 3. Brief description of Scheme—
Dental, Eye and Venereal Clinics Scheme.
It is proposed that in each Civil Hospital a Dental Clinic, and a Venereal Clinic *i.e.* a total of 8 clinics should be established. These clinics will be in charge of Honorary Medical Officers who will be paid a monthly allowance.

4. Areas selected for application, if applicable.. Whole Province.
5. Time expected to be taken for execution. After the War.
6. Brief details of staff required and how staff Twentyfour Honorary Medical Officers (Three at each Civil Hospital) is proposed to be obtained.
7. Rough estimate of cost at existing rates—

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.	Remarks.
(i) Capital	Rs. 20,000	Rs. 10,000	Rs. Nil.	Rs. Nil.	Rs. Nil.	Rs. 30,000	*Represents the cost of additions and alterations to the existing Hospital Buildings to provide these Clinics.
(ii) Recurring	Rs. 18,400	Rs. 18,400	Rs. 18,400	Rs. 18,400	Rs. 18,400	Rs. 92,000	†Includes the cost of honorarium to the Medical Officers and other petty expenses. It is proposed that each Medical Officer should be allowed the honorarium of Rs. 50 per mensem.

8. Extent to which the Scheme will be productive. About 10 per cent. of the recurring expenditure will perhaps be recovered in the shape of cost of medicines supplied to patients.
9. Extent to which the Scheme will cater for returned service personnel. Preference will be given to demobilized Military personnel.

10.	General description of plant, equipment or stores—	Nil.
	(i) to be imported from abroad	—
	(ii) to be obtained in India	—
		Furniture and equipment
11.	Labour force required in the case of the larger schemes.	
12.	Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.	Nil.
13.	Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.	
14.	Any other remarks or information.	—

The opening of these clinics depends on the availability of qualified medical practitioners in the respective places and as such the Scheme will be introduced as and when they become available.

93.

1.	Serial No. of Scheme	..	..	Establishment of a Central Laboratory.
2.	Name of Scheme	..	..	In addition to the Blood Bank Organisation, the laboratory facilities at Hyderabad may be said to be sufficiently adequate in view of the improvements made to the above mentioned organisation by the addition of extra equipment from time to time. Similarly, better laboratory facilities are required in Karachi, for the Civil Hospital and the medical profession. With the transfer of the Medical College to Karachi, it may reasonably be anticipated that the equipment needed for pathological work would also become available. The latter could easily be used as a centre for Blood Bank Work. The existing Bacteriological Section of the Chemico-Bacteriological Laboratory, Karachi, might suitably be amalgamated with the proposed organisation of staff saving equipment and material and creating centralisation of staff conducting similar work. Some of the Laboratory equipment could also be transferred to the New Central Laboratory. The new Central Laboratory would be accommodated in extensions required for the Civil Hospital, Karachi, and should work in conjunction with the Medical College and develop as a Research Institute. The proposal has already been accepted in principle by Government, and its execution would not be pushed through earlier, owing to the Karachi Municipal Corporation's refusal to part with the site of their T. B. Dispensary.
4.	Area selected for application, if applicable:..	..	..	Karachi.
5.	Time expected to be taken for execution. ..	..	..	In the 2nd year of the Plan.

6. Brief details of staff required and how staff is proposed to be obtained.
- (i) One Pathologist.
 - (ii) Two Assistant Pathologists.
 - (iii) Three S.S.M.S. Officers.
 - (iv) Three Chemists.
 - (v) Six Laboratory Assistants.
 - (vi) Three Clerks.
 - (vii) Sixteen Servants.

7. Rough estimate of cost at existing rates ...

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.
(i) Capital	Rs. Nil.	Rs. 10,000	Rs. Nil.	Rs. Nil.	Rs. Nil.	Rs. 10,000
(ii) Recurring	Nil.	Nil.	80,000	80,000	80,000	2,40,000

8. Extent to which the Scheme will be productive. Some fees will accrue in the shape of fees realised from tests.
9. Extent to which the Scheme will cater for returned service personnel. Suitable demobilized persons will be preferred.
10. General description of plant, equipment or stores—
- | | |
|-------------------------------|---|
| (i) to be imported abroad, | } Equipment and instruments will be purchased from Military to the extent possible. Balance will be obtained from local market. |
| (ii) to be obtained in India. | |

94.

1. Serial No. of Scheme. ..
2. Name of Scheme ..
3. Brief description of Scheme

Supply of equipment.

In recent years effort has been made to provide additional equipment at the Civil Hospitals. Nevertheless the bulk of the demand still remains unsatisfied. An abstract list of requirements that should be met in the post-war period is given below :—

Requirements.		Estimated cost.
		Rs.
(1) X-Ray plants at the Civil Hospitals at Mirpurkhas, Nawabshah, Dadu, Larkana and Jacobabad (at Rs. 10,000 each)	.. ..	50,000
(2) Electric Cardiographs at Karachi, Hyderabad and Sukkur (at Rs. 10,000 each)	.. ..	30,000
(3) Deep X-Ray therapy Units for Karachi, Hyderabad and Sukkur (at Rs. 25,000 each)	.. ..	75,000
(4) High Pressure Sterilisers required for 47 new Government dispensaries (at Rs. 400 each)	.. ..	18,800
(5) Miniature Radiography apparatus (at Rs. 5,000 each for 3 places).	.. ..	15,000
(6) Ultra Violet and Infra red lamps for all hospitals except Karachi (at Rs. 1,000 each)	.. ..	7,000
(7) Diathermy apparatus for Civil Hospitals, Karachi, Hyderabad and Sukkur (at Rs. 2,000 each)	.. ..	6,000
(8) Electrolyser plan for all the Civil Hospitals at Rs. 2,000 each	.. ..	16,000

		Rs.
(9)	Air conditioning Units for all the Civil Hospitals (at Rs. 3,000 each)	24,000
(10)	Cold Storage Plant for Medical College	1,500
(11)	Microscopes (at Rs. 500 each at 50 places)	25,000
(12)	Operation Tables Small for new dispensaries (at Rs. 500 each at 50 places)	25,000
(13)	Iron Bedsteads Hospital Pattern (at Rs. 100 each 1,000 beds)	1,00,000
(14)	Bed side lockers (at Rs. 50 each 1,000)	50,000
(15)	Fracture Beds at Rs. 300 each } 50 places	15,000
(16)	Fowler Bed at Rs. 300 each	15,000
(17)	Invalid Chairs (at Rs. 100 each at 24 places)	2,400
(18)	Stretcher Trolleys (at Rs. 200 each at 20 places)	4,000
(19)	Renewal, replacement of equipment of hospitals proposed to be re-constructed or re-modelled for three hospitals at an average of Rs. 15,000 each	45,000
(20)	Requirements due to expansion of the existing hospitals by 1,000 beds. Cost of equipping one bed at Rs. 250 each	2,50,000
(21)	Petty articles of equipment required for 40 new Dispensaries (at an average cost of Rs. 3,000 each)	1,20,000
Total		8,94,700

6. Brief details of staff required and how staff is proposed to be obtained. Nil.

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7. Rough estimates of cost at existing rates

(i) Capital

(ii) Recurring

1st year. Rs.	2nd year Rs.	3rd year. Rs.	4th year. Rs.	5th year. Rs.	Total. Rs.
1,78,940	1,78,940	1,78,940	1,78,940	1,78,940	8,94,700
Nil	Nil	Nil	Nil	Nil	Nil

8. Extent to which the Scheme will be productive.

Fees will be collected for the services of some of the articles of equipment e.g., X-Ray plants, Deep X-Ray therapy Units, etc.

Extent to which the Scheme will cater for returned service personnel. Nil.

10. General description of plant, equipment or stores—
(i) to be imported from abroad, .. } As shown against item 3 of the scheme at Pages 327-328 ante.
(ii) to be obtained in India. .. } Most of the required equipment is likely to be available from the Military Departments.

11. Labour force required in the case of the larger schemes. Nil.

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel. Yes.

13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods. Nil.

14. Any other remarks or information. ..

1. Serial No. of Scheme -- -- 95

2. Name of Scheme -- --

3. Brief description of Scheme -- --

Introduction of full dieting in hospitals.

Free diet is provided to poor and indigent patients in general wards of the civil Hospitals. About 25 to 30 per cent. patients thus receive free diet. The remaining patients have to make their own arrangements for food and are put to considerable inconvenience if they are unable to make such arrangements. The position is also unsatisfactory from the point of view of the medical treatment, for, unless diet is provided by the hospital itself it cannot be properly regulated according to the physicians advice. Introduction of cent. per cent. dieting in the hospitals in question is, therefore, very necessary. About 1,000 extra beds will have to be dieted under this Scheme.

4. Areas selected for application, if applicable --

The whole Province.

5. Time expected to be taken for execution --

Immediately.

6. Brief details of staff required and how staff is proposed to be obtained.

Stewards, Diet Clerks, Cooks and Mates. Staff will be obtained from the demobilized personnel to the extent possible, and the rest by recruitment.

7. Rough estimates of cost at existing rates

Taking 6 annas a day as the cost of diet of each of 1,000 additional beds and 952 existing beds, the expenditure incurred would be Rs. 1,63,800 per annum. This Scheme may be gradually brought into force within four years at the civil Hospitals.

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.
(i) Capital	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.
(ii) Recurring	54,000	81,000	1,08,000	1,35,000	1,62,000	5,40,000

8. Extent to which the Scheme will be productive. Patients, who can afford to pay, will be required to pay for the diet supplied to them at Government expense. It is however not possible to estimate the recoveries on this account. Roughly speaking between 5 to 10 per cent. of the cost can perhaps be recovered from the patients.

9. Extent to which the Scheme will cater for returned service personnel. Demobilized personnel will be absorbed to the extent possible.

10. General description of plant, equipment or stores—

(i) to be imported from abroad,

(ii) to be obtained in India.

Nil.

Utensils, crockery etc., will be obtained locally.

11. Labour force required in the case of the larger schemes.

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.

Nil.

13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.

14. Any other remarks or information

The existing kitchens will have to be extended and improved and dining halls provided.

1.	Serial No. of Scheme	—	—	96.	Training in Pharmacy and Pharmaceutics.
2.	Name of Scheme	—	—	—	The intention of the Scheme is to provide competent and well-qualified Pharmaceutical Chemists for commercial and other undertakings and it is considered that this can best be done by linking it up with the training on somewhat better lines than at present, of compounders and Dispensers, and later bring this to the inter-medical stage in the development of the former. It is therefore proposed that a course of study in Pharmacy should be organised at the Medical College, Sind. The preliminary standard of education should be Matriculation. Similarly the course of instructions for the Compounders should also be arranged at the College.
4.	Areas selected for application	..	..	..	Whole Province.
5.	Time expected to be taken for execution.				To be introduced in the first year of the Five year period.
6.	Brief details of staff required and how staff is proposed to be obtained.				Part-time Professors at Rs. 50/- p. m. each.
7.	Rough estimate of cost at existing rates—				
	(i) Capital	—	—	—	Nil.
	(ii) Recurring	..	..	..	Rs. 4,000 per annum = Rs. 20,000 in five years.
8.	Extent to which the Scheme will be productive.				Some fees will be realized from the students.
9.	Extent to which the Scheme will cater for returned service personnel.				Nil.

8. Extent to which the Scheme will be productive. Rs. 4,000 per annum. Rs. 10,000 in the year.

9. Extent to which the Scheme will cover the cost of the Scheme. Nil.

10. General description of plant, equipment or stores—	(i) to be imported from abroad, (ii) to be obtained in India.	Nil.
11. Labour force required in the case of the larger schemes.	12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.	13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.
14. Any other remarks or information		

The rates of fees will be fixed later and the training for compounders at the Civil Hospitals will be suspended.

97.

College of Dentistry.

There is no College for Dentistry in this Province. It is most important that Sind should have a College of this nature to produce men qualified in scientific dentistry. The Scheme will supply dental surgeons for employment in hospitals and for private practice. The new College may be attached to the Medical College and consequently the inclusion in the post-war programme.

All Province.

The Scheme will be brought into force in the 3rd year.

Professors, Lecturers and other superior and inferior staff. Suitable demobilized persons will be absorbed and the rest by recruitment.

1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Nil.	3,50,000	Nil.	Nil.	Nil.	3,50,000
Nil.	Nil.	21,088	22,288	29,488	72,864

Fees will be charged from students. The rates of fees will be decided at a later stage. Roughly they will amount to above 20 per cent. of the running expenses of the College.

Suitable demobilized personnel with the requisite qualifications will be absorbed as far as possible.

General description of plant, equipment or stores—

(i) to be imported from abroad, Nil.
(ii) to be obtained in India, Equipment and furniture will be available from the Military, failing which, purchase will be made from the local market.

11. Labour force required in the case of the Nil larger schemes.
12. Whether the assistance of the Central Yes. Government, is likely to be required for obtaining materials, machinery or technical personnel.
13. Brief indication, where applicable, of further Nil. development contemplated on the lines of the Scheme in succeeding five year periods.
14. Any other remarks or information.

The College courses will consist of—

- (i) A course on the degree in Dentistry ;
- (ii) A post-graduate course for Medical graduates and licentiates.
- (iii) A course for a diploma in Dental Surgery.

Note.—(i) In this connection, the University of Bombay and the Medical Faculty, will be consulted.

- (ii) More detailed plans with regard to this scheme will have to be worked out and so also the actual recurring expenditure which would depend upon the staff released by the Military
- (iii) Out of the sum of Rs. 3,50,000 provided under the scheme, as non-recurring expenditure Rs. 2,00,000 are earmarked for the main College Buildings, Rs. 1,00,000 for the Hostel and Rs. 50,000 for the equipment.

1.	Serial No. of Scheme	98.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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L (iv) 73—43.	8. Extent to which the Scheme will be productive.	Nil.
	9. Extent to which the Scheme will cater for returned service personnel.	
	10. General description of plant, equipment or stores— (i) to be imported from abroad, (ii) to be obtained in India.	
	11. Labour force required in the case of the larger schemes.	
	12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.	
	13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.	
	14. Any other remarks or information ..	Posts and Telegraphs Department will provide the requisite material.

1.	Serial No. of Scheme	..	..	99.	Establishment of a Provincial Medical Stores Depot.
2.	Name of the Scheme	..	..	..	With the expansion of hospitals and dispensaries in the Province, the question of arrangements for medical supplies to various institutions, it will assume great importance. To meet post-war requirements, it is necessary to establish a Provincial Stores Depot, which should be a Central agency in the Province for the supply of medical stores to all hospitals and dispensaries. This would ensure that the hospitals and dispensaries receive requisite drugs under a properly controlled scheme and also ensure that they are supplied with medicines. etc., of requisite standard.
3.	Brief description of Scheme	..	..	..

The whole Province.

- 4. Areas selected for application if applicable.. The Scheme will be executed in the third year.
- 5. Time expected to be taken for execution .. Medical Officers, Store-Keepers, Compounders and inferior staff. From demobilized personnel to the extent possible, and the rest by recruitment.
- 6. Brief details of staff required and how Staff is proposed to be obtained.

7. Rough estimate of cost at existing rates							.....	Remarks.
	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.		
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.		
(i) Capital	Nil.	*50,000	Nil.	Nil.	Nil.	50,000		*Represents the cost of Buildings required.
(ii) Recurring	Nil.	Nil.	†32,500	32,500	32,500	97,500		†Represents the expenditure on the staff.

- 8. Extent to which the Scheme will be productive. The Scheme will be fully self-supporting.
- 9. Extent to which the Scheme will cater for returned service personnel. Suitable ex-servicemen with requisite qualifications will be taken up to the extent possible.

10. General description of plant, equipment or stores—
 (i) to be imported from abroad, . . . Nil.
 (ii) to be obtained in India. . . Furniture, etc.
11. Labour force required in the case of the larger schemes. Nil.
12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel. Yes.
13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods. Nil.
14. Any other remarks or information . . .
- (a) The details of the Scheme will have to be worked out in consultation with the Medical Stores Department under the Director-General, Indian Medical Service.
- (b) The working capital required for the purchase of stores has not been included in the estimates.
- (c) The construction work of the building will begin in the 2nd year so that the Medical Stores may start functioning in the 3rd year of the First five-year plan.

10.	General description of plant, equipment or stores—	
	(i) to be imported from abroad,	
	(ii) to be obtained in India.	
11.	Labour force required in the case of the larger schemes.	
12.	Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.	Nil.
13.	Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.	
14.	Any other remark or information	.. This Scheme will be particularly helpful in the development of the Medical College, Sind, and provide other specialists.

1.	Serial No. of Scheme	101.																									
2.	Name of Scheme	Ambulance Service Scheme.																								
3.	Brief description of Scheme	With a view to improving medical facilities for the people of the rural areas, one ambulance for each of the Rural and Civil Hospital is necessary. These Ambulances are to be used for collecting serious cases from the rural areas and bringing them to the Rural or Civil Hospitals whichever is nearer. About 8 Ambulances with a Driver and an attendant attached to each will be required. Quarters will also have to be provided in the Hospital Premises for the Driver and the attendant together with the garages for the Ambulances.																								
4.	Areas selected for application, if applicable				Whole Province.																								
5.	Time expected to be taken for execution	The Scheme to be introduced in the second year																								
6.	Brief details of staff required and how staff is proposed to be obtained.				<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> (a) Eight Drivers. (b) Eight Attendants. </div> <div style="font-size: 3em; margin-right: 10px;">}</div> <div> From demobilized Military personnel, and by recruitment. </div> </div>																								
7.	Rough estimate for cost at existing rates				<table border="1"> <thead> <tr> <th>1st year.</th> <th>2nd year.</th> <th>3rd year.</th> <th>4th year.</th> <th>5th year.</th> <th>Total.</th> </tr> <tr> <th>Rs.</th> <th>Rs.</th> <th>Rs.</th> <th>Rs.</th> <th>Rs.</th> <th>Rs.</th> </tr> </thead> <tbody> <tr> <td>Nil.</td> <td>80,000</td> <td>Nil.</td> <td>Nil.</td> <td>Nil.</td> <td>80,000</td> </tr> <tr> <td>Nil.</td> <td>15,200</td> <td>15,200</td> <td>15,200</td> <td>15,200</td> <td>60,800</td> </tr> </tbody> </table>	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Nil.	80,000	Nil.	Nil.	Nil.	80,000	Nil.	15,200	15,200	15,200	15,200	60,800
1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.																								
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.																								
Nil.	80,000	Nil.	Nil.	Nil.	80,000																								
Nil.	15,200	15,200	15,200	15,200	60,800																								
8.	Extent to which the Scheme will be productive.				These ambulances will be available when free, for hire for ambulance work by general public. About 10 per cent. of the recurring cost is likely to be recorded in the shape of hire charges.																								

Demobilized motor drivers etc., will be preferred for a pointment.

- | | | |
|-----|--|---|
| 9. | Extent to which the Scheme will cater for returned service personnel. | |
| 10. | General description of plant, equipment or stores—
(i) to be imported from abroad, }
(ii) to be obtained in India. } | The ambulances will, it is hoped, be available from the Military on payment. |
| 11. | Labour force required in the case of the larger schemes. | Nil. |
| 12. | Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel. | Yes. |
| 13. | Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods. | Nil. |
| 14. | Any other remarks or information. | Some of these Ambulances could be equipped and mobilized as Travelling Dispensaries to assist in cases of serious epidemics in rural areas. |

1. Serial No. of Scheme Children's Hospital Scheme.

2. Name of the Scheme Children's hospitals do not exist in this Province. It is accordingly proposed to provide one such hospital in Karachi in-charge of a Lady Doctor specially qualified in pediatric. The hospital will have accommodation of 50 beds.

Karachi.

4. Areas selected for application, if applicable.
 5. Time expected to be taken for execution ..
 6. Brief details of staff required and how staff is proposed to be obtained.

To be introduced in the first year.

Medical Officers, Nurses, Compounders, Nursing Orderlies, Clerks, Store-Keepers, inferior staff, etc. To be recruited from the demobilized Military personnel and by the normal recruitment.

The construction of this hospital may be taken up in the 1st year so that it may start functioning in the 2nd year.

7. Rough estimate of cost at existing rates—

	1st year. Rs.	2nd year. Rs.	3rd year. Rs.	4th year. Rs.	5th year. Rs.	Total. Rs.
(i) Capital	1,50,000	Nil.	Nil.	Nil.	Nil.	1,50,000
(ii) Recurring	Nil.	60,000	60,000	60,000	60,000	2,40,000

8. Extent to which the Scheme will be productive. A small part of the recurring expenditure will be recovered in the form of fees from patients.
9. Extent to which the Scheme will cater for returned service personnel. Suitable demobilized personnel with requisite qualifications will be appointed

10. General description of plant, equipment or stores—
 (i) to be imported from abroad, Nil.
 (ii) to be obtained in India. Equipment and furniture will be obtained from the Military to the extent possible and the rest locally.
11. Labour force required in the case of the Nil.
 larger schemes.
12. Whether the assistance of the Central Yes.
 Government is likely to be required for obtaining materials, machinery or technical personnel.
13. Brief indication, where applicable, of further Nil.
 development contemplated on the lines of the Scheme in succeeding five year periods.
14. Any other remarks or information .. The estimate of the recurring cost is based on the existing expenditure of the Lady Graham Hospital, Dadu, which is approximately Rs. 60,000.

1.	Serial No. of Scheme	..	..	103.
2.	Name of Scheme	..	..	Establishment of a Tuberculosis Sanatorium.
3.	Brief description of Scheme	..	..	(a) <i>T. B. Sanatorium.</i> — At present there is no Government Tuberculosis Sanatorium in this Province. Arrangements for Tuberculosis Clinics exist in some Civil Hospitals but this by no means can be considered as adequate, as the number of tuberculosis patients requiring hospitalization is considerable. It is accordingly proposed to establish a Sanatorium with 50 beds to begin with to be extended eventually to 100 beds in the Province. It has not yet been possible to decide about the location of the Tuberculosis Sanatorium. In deciding this question due regard will require to be paid to climatic conditions of different places in the Province and adequate water supply and land suitable for cultivation. This scheme is equally important. A Government Sanatorium will serve as a standard to private enterprise.

(b) *T. B. Clinics.*—

These will be established at the Hospitals where these do not exist.

To be decided later.

The scheme will be introduced in the second year of the first five year plan.

(a) *T. B. Sanatorium.*—Superintendent, Medical Officers, Compounders, Nurses, Technicians and Inferior Staff.

(b) *T. B. Clinics.*—Medical Officers, Compounders, Health Visitors, Sweepers, peons and servants.

To be appointed from demobilized Military personnel and by the normal process of recruitment.

4. Areas selected for application, if applicable..

5. Time expected to be taken for execution ..

6. Brief details of staff required and how staff is proposed to be obtained.

7. Rough estimate of cost at existing rates—

(a) Sanatorium.

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total	Remarks.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
(i) Capital	Nil.	*2,00,000	Nil.	Nil.	Nil.	2,00,000	*This excludes the cost of construction which has been provided under Building. Of the sum of Rs. 2,00,000, Rs. 15,000, are earmarked for X-Ray equipment and the remaining amount for other equipment required to fit up the Hospital.
(ii) Recurring	.. Nil.	Nil.	71,000	71,000	71,000	2,13,000	

(b) Clinics.

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total
	.. Nil.	Nil.	Nil.	Nil.	Nil.	Nil.
(i) Capital	.. Nil.	Nil.	Nil.	Nil.	Nil.	Nil.
(ii) Recurring	.. 21,900	21,900	21,900	21,900	21,900	1,09,500

Grand Total.

(i) Capital	.. Rs. 2,00,000
(ii) Recurring	.. Rs. 3,22,500

8. Extent to which the Scheme will be productive.

(a) *Sanatorium*.—About 10 per cent. of the cost would be recoverable in the shape of rent of wards, cost of medicines, X-ray examination, etc.

(b) *Clinics*.—About 5 per cent. of cost would be recoverable in the shape of cost of medicines supplied to patients.

9. Extent to which the Scheme will cater for returned service personnel.

10. General description of plant, equipment or stores—

(i) to be imported from abroad, Such equipment as would be available from the Military will be obtained on payment.

(ii) to be obtained in India. The bulk of equipment will be obtained in India, only some special items may have to be directly imported.

11. Labour force required in the case of the Nil.

Yes.

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.

Nil.

13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.

14. Any other remarks or information.

(a) The need of the Sanatorium and the Clinics is pressing and it is therefore, proposed that Clinics should be established in the first year of the plan and the construction of the T. B. Sanatorium should be undertaken in the second year so that this may start working from third year.

(b) The recurring expenditure on a T.B. Sanatorium is generally greater than that on other Hospitals on account of the nourishing diet and the costly medical treatment which have to be provided.

1. Serial No. of Scheme 104.

2. Name of Scheme Convalescent Homes Scheme.

3. Brief description of Scheme In order to run a teaching institution economically it is important that the Civil Hospital, Karachi, should have in its neighbourhood a Convalescent hospital to unload its Convalescents and such types of cases which would benefit by removal outside the centre of the city. In other words, there should be a convalescent home of 100 beds to relieve the pressure on this Hospital. Like the Children's Hospitals Scheme, the present proposal is intended not only to assist in the building of a new Karachi but also help in relieving pressure from the Civil Hospital, Karachi.

4. Areas selected for application, if applicable. Karachi.

5. Time expected to be taken for execution .. To be introduced in the third year.

6. Brief details of staff required and how staff is proposed to be obtained. Medical Officers, Nurses, Nursing Orderlies, Clerks, Store-Keepers and other inferior staff. To be appointed from demobilized Military personnel and also by recruitment.

7. Rough estimate of cost at existing rates—

	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
(i) Capital ..	Nil.	Nil.	2,75,000	Nil.	Nil.	2,75,000
(ii) Recurring ..	Nil.	Nil.	Nil.	90,000	90,000	1,80,000

8. Extent to which the Scheme will be productive. Small part of the recurring expenditure will be recovered in the shape of fees from patients.

9. Extent to which the Scheme will cater for returned service personnel. Suitable qualified demobilized personnel will be absorbed as far as possible.

10. General description of plant, equipment or stores—
 (i) to be imported from abroad, Nil.
 (ii) to be obtained in India. Equipment will be obtained from the Military to the extent possible.
 Balance will be purchased locally.
11. Labour force required in the case of the larger Schemes.
12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel. Nil.
13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.
14. Any other remarks or information .. The estimate of recurring cost is based on the existing expenditure of new 100 bedded block of the Civil Hospital, Karachi.

1. Serial No. of Scheme	105.																								
2. Name of Scheme	Infirmaries Scheme.																								
3. Brief description of Scheme	In advanced countries medical institutions under the name of Infirmaries exist for the benefit of the indigent, incurable and chronic patients. No such institutions exist in this Province. In curable and chronic cases are at present discharged from the hospitals in order to make room for other patients. The necessity for opening such Infirmaries thus needs no emphasis, and it is therefore, proposed to make a beginning with three Infirmaries with a total accommodation for 150 beds—Karachi 50, Hyderabad 50 and Sukkur 50. These proposals constitute yet one more measure for relieving congestion at the Civil Hospitals and may accordingly be considered important enough to deserve inclusion in the post war development programme.																								
4. Areas selected for application, if applicable..	Karachi, Hyderabad and Sukkur.																								
5. Time expected to be taken for execution.	The Scheme will be introduced in third year of the First five years plan.																								
6. Brief details of staff required and how staff is proposed to be obtained.	Medical Officers, Nurses, Compounders. Nursing Orderlies, Clerks, Storekeepers and other inferior staff, etc. To be appointed from demobilized personnel and by recruitment.																								
7. Rough estimate of cost at the existing rates	<table><tr><td>1st year.</td><td>2nd year.</td><td>3rd year.</td><td>4th year.</td><td>5th year.</td><td>Total.</td></tr><tr><td>Rs.</td><td>Rs.</td><td>Rs.</td><td>Rs.</td><td>Rs.</td><td>Rs.</td></tr><tr><td>.. Nil.</td><td>Nil.</td><td>2,50,000</td><td>2,50,000</td><td>Nil.</td><td>5,00,000</td></tr><tr><td>.. Nil.</td><td>Nil.</td><td>Nil.</td><td>1,20,000</td><td>1,80,000</td><td>3,00,000</td></tr></table>	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	.. Nil.	Nil.	2,50,000	2,50,000	Nil.	5,00,000	.. Nil.	Nil.	Nil.	1,20,000	1,80,000	3,00,000
1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.																							
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.																							
.. Nil.	Nil.	2,50,000	2,50,000	Nil.	5,00,000																							
.. Nil.	Nil.	Nil.	1,20,000	1,80,000	3,00,000																							
(i) Capital																							
(ii) Recurring																							

8. Extent to which the Scheme will be productive. Nil
9. Extent to which the Scheme will cater for returned service personnel. Suitable qualified demobilized personnel will be appointed.
10. General description of plant, equipment or stores—
 (i) to be imported from abroad, } Equipment will be obtained from the Military to the extent possible.
 (ii) to be obtained in India. } Balance will be purchased locally.
11. Labour force required in the case of the larger schemes. Nil.
12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel. Yes.
13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods. Nil.
14. Any other remarks or information. ..

11. Labour force required in the case of the Nil.
larger schemes.

12. Whether the assistance of the Central Yes.
Government is likely to be required for
obtaining materials, machinery or techni-
cal personnel.

13. Brief-indication, where applicable, of further Nil.
development contemplated on the 'lines
of the Scheme in succeeding five year
periods.

14. Any other remarks or information

(a) Patients throughout the Province requiring radium treatment will
benefit by the establishment of the institute.

(b) The construction work will commence in the third year and the ins-
titute will start working in the fourth year of the First five
year plan.

8. Extent to which the Scheme will be productive. Well-to-do patients will pay for their treatment. About 10 per cent. of the recurring cost would thus be recoverable in the shape of treatment and accommodation charges.
9. Extent to which the Scheme will cater for returned service personnel. Suitable ex-servicemen will be absorbed.
10. General description of plant, equipment or stores—
 (i) to be imported from abroad. Electro shock therapy units, etc., will have to be imported from abroad.
 (ii) to be obtained in India. Major portion of the equipment needed for the Hospital will, it is hoped, be available from the Military on payment.
11. Labour force required in the case of the Nil larger schemes.
12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel. Yes.
13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods. Nil.
14. Any other remarks or information . . .

B.—Public Health Services.

- | | | | |
|----|-----------------------------|----|--|
| 1. | Serial No. of Scheme | .. | 108. |
| 2. | Name of Scheme | .. | District Health Staff. |
| 3. | Brief description of Scheme | .. | The Scheme aims at providing sanitary staff in rural areas with a view to raising the standard of rural sanitation. The Scheme also envisages carrying out anti-malaria operations. The improvement of the general sanitation in rural areas would improve the general health standards of the Province. This is a very urgent Scheme long since approved by Government in principle but has not been put into operation because the Scheme for the provincialisation of health staff of the local bodies could not be pushed through. |
- Whole Province.
- Four areas selected for application, if applicable
- Time expected to be taken for execution ..
- Brief details of staff required and how it is proposed to be obtained—
1. Eight District Health Officers (M.B., B.S., D.P.H.)—One Health Officer for each district.
 2. Eight District Health Inspectors. (Sanitary Inspectors Examination).—One Health Inspector for each district.
 3. Sixteen Divisional Health Inspectors. (Sanitary Inspectors Examination).—Two Divisional Health Inspectors in each district, *i. e.*, one in each division.
 4. One hundred and twenty-two Jamadars. (Intelligent persons with some knowledge of English)—Two Jamadars in each taluka.
 5. Six hundred and ten Sweepers—Ten sweepers in each taluka.
 6. Forty Peons: 32 for District Health Officers.—Four peons for each District Health Officer.
8 for District Health Inspectors—One peon for each District Health Inspector.
 7. Sixteen clerks: 8 Senior clerks } One senior and one junior clerk
8 Junior clerks } for each District Health Officer.
- The staff will be recruited by the normal process of recruitment.

7. Rough estimate of cost at existing rates..

(i) Capital
(ii) Recurring

1st year. Rs.	2nd year. Rs.	3rd year. Rs.	4th year. Rs.	5th year. Rs.	Total. Rs.
.. 20,000	Nil.	Nil.	Nil.	2,04,800	2,24,800
.. 1,10,240	3,24,204	3,33,576	3,37,188	5,55,820	16,61,028

[For details please see the statement at pages 359—363 *post.*]

8. Extent to which the Scheme will be productive.

The general sanitation in rural areas would improve the standard of general health. Anti-malaria measures would be directed towards killing adult mosquitoes and the elimination of the prolific sources of breeding of anopheles mosquitoes, as far as possible.

9. Extent to which the Scheme will cater for returned service personnel.

Clerks, Jamadars, peons and sweepers numbering 788 could be employed from the demobilised forces. As regards Health Officers and the Inspectorate staff, persons with war service and with the requisite qualifications would be given preference.

10. General description of plant, equipment or stores—

(i) to be imported from abroad.
(ii) to be obtained in India.

} Conservancy equipment, anti-malaria equipment, Frigidaires.

} Perhaps with the exception of Frigidaires, all other material will be obtainable in India.

11. Labour force required in the case of the larger schemes.

Labour force would be required for the construction of offices for the District Health Officers and their staff.

12. Whether assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.

If surplus stores are available with the Military authorities, they may be obtained through the Central Government. Frigidaires may also be obtained through the Central Government.

12. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in the succeeding five year periods.

The sanitary staff will have to be strengthened in the succeeding five year plans, and anti-malaria operations carried out on a larger scale.

14. Any other remarks or information ..

Nil.

Statement showing the details of expenditure involved in Scheme
No. 108 (Item No. 7 of the Scheme).

1st Year.

<i>District Health Officers (8)—</i>				
Scale of pay Rs. 350—20—550—30—700—50—750 E.Bs. at Rs. 550 and Rs. 700.			$350 \times 8 \times 12 = \text{Rs.}$	33,600
<i>District Health Inspectors (8)—</i>				
Scale of pay Rs. 70—4—90—5—140—6—170			$70 \times 8 \times 12 = \text{Rs.}$	6,720
<i>Clerks (16)—</i>				
(i) Scale of pay Rs. 80—5/2—95 (8)			$80 \times 8 \times 12 = \text{Rs.}$	7,680
(ii) Scale of pay Rs. 25—5/2—55 (8)			$30 \times 8 \times 12 = \text{Rs.}$	2,880
<i>Peons for District Health Officers (32)—</i>				
Scale of pay Rs. 16—1/5—20 with a starting pay of Rs. 20 per mensem each.			$20 \times 32 \times 12 = \text{Rs.}$	7,680
<i>Peons for District Health Inspectors (8)—</i>				
Scale of pay Rs. 16—1/5—20 with a starting pay of Rs. 20 per mensem.			$20 \times 8 \times 12 = \text{Rs.}$	1,920
<i>Allowances—</i>				
P. T. A. for District Health Officers at Rs. 150 per mensem each			$150 \times 8 \times 12 = \text{Rs.}$	14,400
P. T. A. for District Health Inspectors at Rs. 50 per mensem each.			$50 \times 8 \times 12 = \text{Rs.}$	4,800
P. T. A. for peons to District Health Inspectors at Rs. 10 per mensem each.			$10 \times 8 \times 12 = \text{Rs.}$	960
Vaccine, sera and disinfectants at Rs. 1,000 per annum for each district.			$1,000 \times 8 = \text{Rs.}$	8,000
Furniture for the offices of the District Health Officers and District Health Inspectors at Rs. 500 for each district.			$500 \times 8 = \text{Rs.}$	4,000
Travelling Allowance for clerks and peons at Rs. 500 per annum for each district.			$500 \times 8 = \text{Rs.}$	4,000
<i>Contingencies—</i>				
Office rent for the District Health Officers and District Health Inspectors, if not housed in the Government buildings, at Rs. 100 per mensem for each District.			$100 \times 8 \times 12 = \text{Rs.}$	9,600
Refrigerators—one for each district for storing vaccine and sera, at Rs. 1,000 each.			$1,000 \times 8 = \text{Rs.}$	8,000
One Typewriter and One Duplicator for each district at Rs. 1,000.			$1,000 \times 8 = \text{Rs.}$	8,000
Other Contingencies including postage stamps, stationery, etc., at Rs. 1,000 for each district.			$1,000 \times 8 = \text{Rs.}$	8,000
			Total .. Rs.	1,30,240

Non-recurring Expenditure.
Rs. 20,000

Recurring Expenditure.
Rs. 1,10,240

IIInd Year.

<i>District Health Officers (8)—</i>				
Pay Rs. 370 per mensem each			$370 \times 8 \times 12 = \text{Rs.}$	35,520
<i>District Health Inspectors (8)—</i>				
Pay Rs. 74 per mensem each			$74 \times 8 \times 12 = \text{Rs.}$	7,104
<i>Clerks (16)—</i>				
(i) 8 clerks pay Rs. 80 per mensem each			$80 \times 8 \times 12 = \text{Rs.}$	7,680
(ii) 8 clerks pay Rs. 30 per mensem each			$30 \times 8 \times 12 = \text{Rs.}$	2,880
<i>Peons for District Health Officers (32)—</i>				
Pay Rs. 20 per mensem each			$20 \times 32 \times 12 = \text{Rs.}$	7,680

Peons for District Health Inspectors (8)—

Pay Rs. 20 per mensem each	$20 \times 8 \times 12 = \text{Rs.}$	1,920
P. T. A. for District Health Officers at Rs. 150 per mensem each.	$150 \times 8 \times 12 = \text{,,}$	14,400
P. T. A. for peons to District Health Inspectors at Rs. 10 per mensem each.	$10 \times 8 \times 12 = \text{,,}$	960

Divisional Health Inspectors (16)—

Scale of pay Rs. 55—3—100—5—150	$55 \times 16 \times 12 = \text{,,}$	10,560
P. T. A. for Divisional Health Inspectors at Rs. 30 per mensem each.	$30 \times 16 \times 12 = \text{,,}$	5,760
Office Allowance for 8 Divisional Inspectors with Headquarters at places other than at the District Headquarters at Rs. 5 per mensem each.	$5 \times 8 \times 12 = \text{,,}$	480

Jamadars (61)—

Scale of pay Rs. 40—1—60	$40 \times 61 \times 12 = \text{,,}$	29,280
Conveyance Allowance for the Jamadars at Rs. 15 per mensem each.	$15 \times 61 \times 12 = \text{,,}$	10,980

Sweepers (305)—

Pay Rs. 30 per mensem each	$30 \times 305 \times 12 = \text{,,}$	1,09,800
Conveyance Allowance for sweepers at Rs. 10 per mensem each.	$10 \times 305 \times 12 = \text{,,}$	36,600
Equipment for the conservancy staff		5,000
Vaccine, Sera and disinfectants at Rs. 1,000 per annum for each district.	$1,000 \times 8 = \text{,,}$	8,000
Travelling Allowance for clerks and peons at Rs. 500 per annum for each district.	$500 \times 8 = \text{,,}$	4,000
Office rent for the District Health Officers and staffs at Rs. 100 per mensem for each district.	$100 \times 8 \times 12 = \text{,,}$	9,600
Contingencies including postage stamps, stationery, etc., at Rs. 1,000 for each district.	$1,000 \times 8 = \text{,,}$	8,000
Anti-malaria equipment, sprays and larvicides at Rs. 1,000 per annum for each district.	$1,000 \times 8 = \text{,,}$	8,000

Total .. Rs. 3,24,204

Non-recurring Expenditure.
Nil.

Recurring Expenditure.
Rs. 3,24,204

IIIrd Year.

District Health Officers (8)—

Pay Rs. 390 per mensem each	$390 \times 8 \times 12 = \text{Rs.}$	37,440
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District Health Inspectors (8)—

Pay Rs. 78 per mensem each	$78 \times 8 \times 12 = \text{,,}$	7,488
------------------------------------	-------------------------------------	-------

Clerks (16)—

8 clerks—pay Rs. 85 per mensem each	$85 \times 8 \times 12 = \text{,,}$	8,160
8 clerks—pay Rs. 35 per mensem each	$35 \times 8 \times 12 = \text{,,}$	3,360

Peons for District Health Officers (32)—

Pay Rs. 20 per mensem each	$20 \times 32 \times 12 = \text{,,}$	7,680
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Peons for District Health Inspectors (8)—

Pay Rs. 20 per mensem each	$20 \times 8 \times 12 = \text{,,}$	1,920
P. T. A. for the District Health Officers at Rs. 150 per mensem each.	$150 \times 8 \times 12 = \text{,,}$	14,400
P. T. A. for the District Health Inspectors at Rs. 50 per mensem each.	$50 \times 8 \times 12 = \text{,,}$	4,800
P. T. A. for peons to District Health Inspectors at Rs. 10 per mensem each.	$10 \times 8 \times 12 = \text{,,}$	960

<i>Divisional Health Inspectors (16)—</i>			
Pay Rs. 58 per mensem each	58 × 16 × 12 = Rs.	11,136	
P. T. A. for the Divisional Health Inspectors at Rs. 30 per mensem each.	30 × 16 × 12 = ..	5,760	
Office allowance for 8 Divisional Health Inspectors with Headquarters at places other than the District Headquarters at Rs. 5 per mensem each.	5 × 8 × 12 = ..	480	
<i>Jamadars (61)—</i>			
Pay Rs. 41 per mensem each	41 × 61 × 12 = ..	30,012	
Conveyance Allowance for Jamadars at Rs. 15 per mensem each.	15 × 61 × 12 = ..	10,980	
<i>Sweepers (305)—</i>			
Pay Rs. 30 per mensem each	30 × 305 × 12 = ..	1,09,800	
Conveyance Allowance for sweepers at Rs. 10 per mensem each.	10 × 305 × 12 = ..	36,600	
Equipment for the conservancy staff	= ..	5,000	
Vaccino, Sera and disinfectants at Rs. 1,000 per annum for each district.	..	8,000	
Travelling Allowance for clerks and peons at Rs. 500 per annum for each district.	500 × 8 = ..	4,000	
Office rent for the District Health Officers and their staff at Rs. 100 per mensem.	100 × 8 × 12 = ..	9,600	
Contingencies including postage stamps, stationery, etc. at Rs. 1,000/- for each district.	1,000 × 8 = ..	8,000	
Anti-malaria material at Rs. 1,000/- for each district ..	1,000 × 8 = ..	8,000	
Total .. Rs.		3,33,576	

Non-recurring Expenditure.
Nil.

Recurring Expenditure.
Rs. 3,33,576

IVth Year.

<i>District Health Officers (8)—</i>			
Pay Rs. 410 per mensem each	410 × 8 × 12 = Rs.	39,360	
<i>District Health Inspectors (8)—</i>			
Pay Rs. 82 per mensem each	82 × 8 × 12 = ..	7,872	
<i>Clerks (16)—</i>			
Pay Rs. 85 per mensem (8)	85 × 8 × 12 = ..	8,160	
Pay Rs. 35 per mensem (8)	35 × 8 × 12 = ..	3,360	
<i>Peons for District Health Officers (32)—</i>			
Pay Rs. 20 per mensem each	20 × 32 × 12 = ..	7,680	
<i>Peons for District Health Inspectors (8) —</i>			
Pay Rs. 20 per mensem each	20 × 8 × 12 = ..	1,920	
P. T. A. for District Health Officers at Rs. 150 per mensem each.	150 × 8 × 12 = ..	14,400	
P. T. A. for District Health Inspectors at Rs. 50 per mensem each.	50 × 8 × 12 = ..	4,800	
P. T. A. for peons to District Health Inspectors at Rs. 10/- per mensem each.	10 × 8 × 12 = ..	960	
<i>Divisional Health Inspectors (16)—</i>			
Pay Rs. 61 per mensem each	61 × 16 × 12 = ..	11,712	
P. T. A. for the Divisional Health Inspectors at Rs. 30/- per mensem each	30 × 16 × 12 = ..	5,760	
Office allowance for 8 Divisional Inspectors, with Headquarters at places other than at the District Headquarters, at Rs. 5 per mensem each.	5 × 8 × 12 = ..	480	
<i>Jamadars (61)—</i>			
Pay Rs. 42 per mensem each	42 × 61 × 12 = ..	30,744	
Conveyance Allowance for Jamadars at Rs. 15 per mensem each.	15 × 61 × 12 = ..	10,980	

Sweepers (305)—

Pay Rs. 30 per mensem each	$30 \times 305 \times 12 =$ Rs.	1,09,800
Conveyance Allowance for the sweepers at Rs. 10 per mensem	$10 \times 305 \times 12 =$..	36,600
Equipment for the conservancy staff		5,000
Vaccine, Sera and disinfectants at Rs. 1,000 per annum for each district.	$1,000 \times 8 =$..	8,000
Travelling Allowance for clerks and peons at Rs. 500 per annum for each district.	$500 \times 8 =$..	4,000
Office rent for the District Health Officer and their staffs at Rs. 100 per mensem each district.	$100 \times 8 \times 12 =$..	9,600
Contingencies including postage stamps stationery, etc. at Rs. 1,000 per annum for each district.	$1,000 \times 8 =$..	8,000
Anti-malaria material at Rs. 1,000 per annum for each district.	$1,000 \times 8 =$..	8,000

Total .. Rs. 3,37,180

Non-recurring Expenditure.
Nil.

Recurring Expenditure.
Rs. 3,37,188

Vth Year.

Construction of buildings to accommodate the offices of the District Health Officers, District Health Inspectors, and Divisional Health Inspectors stationed at the District Headquarters, at Rs. 25,000 for each district. Rs. 2,00,000

District Health Officers (8)—

Pay Rs. 430 per mensem each $430 \times 8 \times 12 =$.. 41,280

District Health Inspectors (8)—

Pay Rs. 86 per mensem each $86 \times 8 \times 12 =$.. 8,256

Clerks (16)—

8 clerks—pay Rs. 90 per mensem $90 \times 8 \times 12 =$.. 8,640

8 clerks—pay Rs. 40 per mensem $40 \times 8 \times 12 =$.. 3,840

Peons for District Health Officers (32)—

Pay Rs. 20 per mensem each $20 \times 32 \times 12 =$.. 7,680

Peons for District Health Inspectors (8)—

Pay Rs. 20 per mensem each $20 \times 8 \times 12 =$.. 1,920

P. T. A. for the District Health Officers at Rs. 150 per mensem each. $150 \times 8 \times 12 =$.. 14,400

P. T. A. for District Health Inspectors at Rs. 50 per mensem each. $50 \times 8 \times 12 =$.. 4,800

P.T.A. for peons to District Health Inspectors at Rs. 10 per mensem. $10 \times 8 \times 12 =$.. 960

Divisional Health Inspectors (16)—

Pay Rs. 64 per mensem each $64 \times 16 \times 12 =$.. 12,288

P. T. A. for the Divisional Health Inspectors at Rs. 30 per mensem each. $30 \times 16 \times 12 =$.. 5,760

Office Allowance for 8 Divisional Health Inspectors at places other than the district headquarters at Rs. 5 per mensem each. $5 \times 8 \times 12 =$.. 480

Jamadars (122)—

(2) 61—Pay Rs. 43 per mensem each $43 \times 61 \times 12 =$.. 31,476

(12) 61—Pay Rs. 40 per mensem each $40 \times 61 \times 12 =$.. 29,280

P. T. A. for the Jamadars at Rs. 15 per mensem each .. $15 \times 122 \times 12 =$.. 21,960

Sweepers (610)—

Pay Rs. 30 per mensem each	$30 \times 610 \times 12 =$	Rs. 2,19,600
Conveyance Allowance for sweepers at Rs. 10 per mensem each.	$10 \times 610 \times 12 =$	„ 73,200
Equipment for conservancy staff		10,000
Vaccine, Sera and disinfectants at Rs. 1,500/- for each district.	$1,500 \times 8 =$	„ 12,000
Travelling Allowance for clerks and peons at Rs. 500 per annum for each district.	$500 \times 8 =$	„ 4,000
Office rent for District Health Officers and their staff for 6 months at Rs. 100 per mensem.	$100 \times 8 \times 6 =$	„ 4,800
Contingencies including postage stamps, stationery, etc. at Rs. 1,000 per annum for each district.	$1,000 \times 8 =$	„ 8,000
Anti-malaria material at Rs. 2,000 per annum for each district.	$2,000 \times 8 =$	„ 16,000

Total .. Rs. 7,60,620

Non-recurring Expenditure.
Rs. 2,04,800

Recurring Expenditure.
Rs. 5,55,820

109. MATERNITY AND CHILD WELFARE CENTRES.

- | | | | | | |
|----|-----------------------------|------|----|----|----|
| 1. | Serial No. of Scheme | .... | .. | .. | .. |
| 2. | Name of Scheme | .. | .. | .. | .. |
| 3. | Brief description of Scheme | .. | .. | .. | .. |
- The object of this Scheme is to provide better and adequate facilities for training personnel for maternity service in rural areas. The Scheme aims at the establishment of a central organisation for the control and direction of maternity services, and a maternity home and child-welfare centre in each taluka in addition to providing domiciliary midwifery facilities beyond the taluka headquarters with a view to ensure healthy growth of future generation and to provide the much needed relief to the expectant and nursing mothers. The Scheme contemplates the appointment of an Assistant Directress of Public Health (to work as a Superintendent of Maternity Services) lady health visitors and ancillary staff.

4. Areas selected for application, if applicable. The whole Province.

5. Time expected to be taken for execution ... Five years.

6. Brief details of staff required and how it is proposed to be obtained.

1. Assistant Directress of Public Health.—(1). Medical graduate possessing diploma in maternity and child welfare and having practical experience in the working of the Maternity and Child Welfare Organisations.

2. Clerks—(4). Matriculation Examination.

3. Peons—(402). Peons for Lady Health Visitors, Midwives and Assistant Midwives should preferably be females.

4. Lady Health Visitors—(16). Qualified and registered Lady Health Visitors.

5. Midwives—(61). Qualified and registered midwives.

6. Assistant Midwives—(366). Qualified Assistant Midwives.

The staff would be obtained locally by the normal process of recruit-

7. Rough estimate of cost at existing rates.

	1st year Rs.	2nd year Rs.	3rd year Rs.	4th year Rs.	5th year Rs.	Total. Rs.
(i) Capital	1,27,100	1,25,600	2,91,200	2,91,200	2,04,100	10,39,200
(ii) Recurring	93,812	2,25,726	3,70,136	6,05,304	6,56,460	19,51,438

[For details, please see the statement at page 366—373 *post.*]

8. Extent to which the Scheme will be productive. It would ensure the healthy growth of the future generation and provide the much needed relief to the expectant and nursing mothers.

9. General description of the plant, equipment or stores: } The necessary material would be obtainable in India.

- (i) to be imported from abroad ..
- (ii) to be obtained in India ..

10. Extent to which the Scheme will cater for returned service personnel. Clerical appointments would be available for the returned service personnel.

11. Labour force required in the case of the larger schemes. Labour force would be required for the construction of buildings.

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel. Nil.

13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods. More trained personnel would be required, thus bringing a large area under the orbit of the Scheme.

14. Any other remarks or information .. Nil.

Statement showing the details of expenditure involved in Scheme
No. 109 (Item No. 7 of the Scheme).

Ist Year.

A. D. P. H. I/C Maternity and Child Welfare Services (1)—

Scale of pay Rs. 400—30—550—E.B.—585—35—760—E.B.
—805—45—850. $400 \times 12 =$ Rs. 4,80

Clerks (4)—

Head clerk (1)—Scale of pay Rs. 95—5—125 $95 \times 12 =$ „ 1,14
Senior clerk (1)—Scale of pay Rs. 80—5/2—95 $80 \times 12 =$ „ 96
Junior clerks (2)—Scale of pay Rs. 25—5/2—55 .. $30 \times 2 \times 12 =$ „ 720

Peons (4)—

Scale of pay Rs. 16—1/5—20 $16 \times 4 \times 12 =$ „ 768
Compensatory allowance for the Lady A. D. P. H. at
Rs. 35 per mensem. $35 \times 12 =$ „ 420
Karachi Local Allowance for the Head Clerk at Rs. 25 per
mensem } $65 \times 12 =$ „ 780
Do. Senior Clerk at Rs. 20 per mensem. }
Do. Junior Clerks at Rs. 10 per mensem each. }
Do. peons at Rs. 4 per mensem each $8 \times 4 \times 12 =$ „ 384
House rent allowance for peons at Rs. 4 per mensem each. }
Office rent at Rs. 100 per mensem if not housed in the
Government building. $100 \times 12 =$ „ 1,200
Office furniture at Rs. 500 „ 500
Typewriter and duplicator at Rs. 1,000/- „ 1,000
Travelling Allowance at Rs. 1,500 per annum „ 1,500
Contingencies including postage and stationery at Rs. 500
per annum. „ 500

Maternity Homes and Child Welfare Centres (8)—

Midwives (8)—

Scale of pay Rs. 60—5—100 $60 \times 8 \times 12 =$ „ 5,760
P. T. A. for the Midwives at Rs. 30 per mensem $30 \times 8 \times 12 =$ „ 2,880

Assistant Midwives (8)—

Scale of pay Rs. 40—2—60 $40 \times 8 \times 12 =$ „ 3,840

Peons (8)—

Scale of pay Rs. 16—1/5—20 $16 \times 8 \times 12 =$ „ 1,536

Part-time sweepers (8)—

At Rs. 5 per mensem each $5 \times 8 \times 12 =$ „ 480
P. T. A. for 8 peons at Rs. 10 per mensem each $10 \times 8 \times 12 =$ „ 960
Construction of maternity homes and quarters for the staff
at Rs. 15,000 each. $15,000 \times 8 =$ „ 1,20,000
Equipment of 4 beds at Rs. 700 for each Maternity Home. $700 \times 8 =$ „ 5,600
Linen Medicines, etc. at Rs. 700/- for each Maternity Home $700 \times 8 =$ „ 5,600
Distribution of milk for the undernourished children and
articles of toilet at Rs. 1,000/- per annum for each centre. $1,000 \times 8 =$ „ 8,000
Contingencies including diets for indoor patients, postage
stamps and stationery at Rs. 400 per annum for each. $400 \times 8 =$ „ 3,200

Assistant midwives for domiciliary midwifery (32)—

Scale of pay Rs. 40—2—60 $40 \times 32 \times 12 =$ „ 15,360
P. T. A. for Assistant Midwives at Rs. 25 per mensem $25 \times 32 \times 12 =$ „ 9,600

Peons for Assistant Midwives (32)—

Scale of pay Rs. 16—1/5—20 $16 \times 32 \times 12 =$ „ 6,144
P. T. A. for peons at Rs. 10 per mensem each $10 \times 32 \times 12 =$ „ 3,840
House rent allowance for the Assistant Midwives at Rs. 5
per mensem each. $5 \times 32 \times 12 =$ „ 1,920
House rent allowance for peons at Rs. 5 per mensem each .. $5 \times 32 \times 12 =$ „ 1,920
Contingencies including postage, stationery and medicines
at Rs. 300 per annum for each Assistant Midwife. $300 \times 32 =$ „ 9,600

Total .. Rs. 2,20,912

Non-recurring Expenditure.
Rs. 1,27,100

Recurring Expenditure.
Rs. 93,812

IInd Year.

<i>Lady A.D.P.H. (1)—</i>					
Pay at Rs. 430 per mensem	..	..	..	$430 \times 12 = \text{Rs.}$	5,160
<i>Clerks (4)—</i>					
Pay at Rs. 100 per mensem (1)	..	..	..	$100 \times 12 =$	1,200
Pay at Rs. 80 per mensem (1)	..	..	..	$80 \times 12 =$	960
Pay at Rs. 30 per mensem (2)	..	..	..	$30 \times 2 \times 12 =$	720
<i>Peons (4)—</i>					
Pay at Rs. 16 per mensem each	..	..	..	$16 \times 4 \times 12 =$	768
<i>Allowances, etc.—</i>					
Compensatory Allowance for A.D.P.H. at Rs. 37-8-0 per mensem.				$37\frac{1}{2} \times 12 =$	450
Karachi Local Allowance for the Head clerk at Rs. 25 per mensem.					
Karachi Local Allowance for the Senior Clerk at Rs. 20 per mensem.				$65 \times 12 =$	780
Karachi Local Allowance for the junior clerks at Rs. 10 per mensem each.					
Karachi Local Allowance for the peons at Rs. 4 per mensem each.				$8 \times 4 \times 12 =$	384
House rent allowance at Rs. 4 per mensem each	..	..	..
Office rent at Rs. 100 per mensem	..	..	..	$100 \times 12 =$	1,200
Travelling Allowances	..	..	..		2,000
Contingencies including postage stamps, stationery, etc.	..	..	..		1,000
<i>Maternity Homes and C. W. Centres—</i>					
<i>(i) 8 established in the 1st year :</i>					
8 Midwives Pay at Rs. 65 per mensem	..	..	..	$65 \times 8 \times 12 =$	6,240
8 Assistant Midwives at Rs. 42 per mensem	..	..	..	$42 \times 8 \times 12 =$	4,032
8 Peons at Rs. 16 per mensem each	..	..	..	$16 \times 8 \times 12 =$	1,536
8 Part-time sweepers at Rs. 5/- per mensem each	..	..	..	$5 \times 8 \times 12 =$	480
P. T. A. for Midwives at Rs. 30 per mensem each	..	..	..	$30 \times 8 \times 12 =$	2,880
P. T. A. for peons at Rs. 10 per mensem each	..	..	..	$10 \times 8 \times 12 =$	960
Linen and medicines, etc. at Rs. 700 per annum for each	..	..	..	$700 \times 8 =$	5,600
Distribution of milk for the undernourished children; and articles of toilet at Rs. 1,000/- per annum for each.	..	..	..	$1,000 \times 8 =$	8,000
Contingencies including diet for indoor patients, postage stamps and stationery at Rs. 400 per annum for each.	..	..	..	$400 \times 8 =$	3,200
<i>(ii) 8 established in the 2nd year—</i>					
<i>8 midwives—</i>					
Scale of pay Rs. 60—5—100	..	..	..	$60 \times 8 \times 12 =$	5,760
<i>8 Assistant Midwives—</i>					
Scale of pay Rs. 40—2—60	..	..	..	$40 \times 8 \times 12 =$	3,840
8 Peons at Rs. 16/- per mensem each	..	..	..	$16 \times 8 \times 12 =$	1,536
8 Part-time sweepers at Rs. 5/-	..	..	..	$5 \times 8 \times 12 =$	480
P. T. A. for Midwives at Rs. 30 per mensem each	..	..	..	$30 \times 8 \times 12 =$	2,880
P. T. A. for peons at Rs. 10/-	..	..	..	$10 \times 8 \times 12 =$	960
Construction of Maternity Homes and quarters for the staff at Rs. 15,000/- each.	..	..	..	$15,000 \times 8 =$	1,20,000
Equipment for 4 beds at Rs. 700/- each	..	..	..	$700 \times 8 =$	5,600
Linen, medicines, etc. at Rs. 700 per annum each	..	..	..	$700 \times 8 =$	5,600
Distribution of milk for the undernourished children and articles of toilet at Rs. 1,000/- per annum for each centre.	..	..	..	$1,000 \times 8 =$	8,000
Contingencies including diet for indoor patients, postage stamps and stationery at Rs. 400 per annum for each.	..	..	..	$400 \times 8 =$	3,200
<i>Assistant Midwives for domiciliary midwifery—</i>					
(i) 32 appointed in the 1st year at Rs. 42 per mensem	..	..	..	$42 \times 32 \times 12 =$	16,128
(ii) 64/96 appointed in the IInd year Rs. 40 per mensem each	..	..	..	$40 \times 64 \times 12 =$	30,720
P. T. A. for Assistant Midwives (96) at Rs. 25 per mensem each.	..	..	..	$25 \times 96 \times 12 =$	28,800
P. T. A. for peons at Rs. 10 per mensem each	..	..	..	$10 \times 96 \times 12 =$	11,520
Pay of the peons (96) at Rs. 16 per mensem each	..	..	..	$16 \times 96 \times 12 =$	18,432
House rent allowance for Assistant Midwives at Rs. 5/- per each.	..	..	..	$5 \times 96 \times 12 =$	5,760
House rent allowance for peons at Rs. 5 per mensem each	..	..	..	$5 \times 96 \times 12 =$	5,760
Contingencies including postage stationery and medicines at Rs. 300 per annum each.	..	..	..	$300 \times 96 =$	28,800
				Total .. Rs.	3,51,326

Non-recurring Expenditure.
Rs. 1,25,600

Recurring Expenditure.
Rs. 2,25,726

IIIrd Year.

				460 × 12 = Rs.	5,520
A. D. P. H. (I)—					
Pay Rs. 460 per mensem	..	..	..
				105 × 12 = "	1,260
				85 × 12 = "	1,020
				35 × 2 × 12 = "	840
Clerks (4)—					
Pay Rs. 105/- per mensem (1)	..	..	..
Pay Rs. 85/- per mensem (1)	..	..	..
Pay Rs. 35/- per mensem (2)	..	..	..
Peons (4)—					
Allowances, etc.—					
Pay Rs. 16 per mensem each	..	..	..	16 × 4 × 12 = "	768
Compensatory allowance of A. D. P. H. at Rs. 40/- per mensem.	..	..	..	40 × 12 = "	480
Karachi Local Allowance for the Head Clerk at Rs. 25 per mensem.	..	..	..
Karachi Local Allowance for the Senior Clerk at Rs. 25 per mensem.	..	..	..	70 × 12 = "	840
Karachi Local Allowance for the Junior Clerks at Rs. 10 per mensem each.	..	..	..
Karachi Local Allowance for the Peons at Rs. 4 per mensem each.	..	..	..	8 × 4 × 12 = "	384
House rent allowance at Rs. 4 per mensem	..	..	..	100 × 12 = "	1,200
Office rent at Rs. 100 per mensem	..	..	..	"	2,500
Travelling Allowance	..	..	..	"	1,500
Contingencies including postage, stationery, etc.	..	..	..
Maternity Homes and C. W. Centres—					
(i) 8 established in the 1st year—					
8 Midwives Pay at Rs. 70/- per mensem	..	..	..	70 × 8 × 12 = "	6,720
8 Assistant Midwives at Rs. 44/- per mensem	..	..	..	44 × 8 × 12 = "	4,224
8 Peons at Rs. 16/- per mensem each	..	..	..	16 × 8 × 12 = "	1,536
8 Part-time sweepers at Rs. 5/- per mensem	..	..	..	5 × 8 × 12 = "	480
P. T. A. for the midwives at Rs. 30 per mensem each	..	..	..	30 × 8 × 12 = "	2,880
P. T. A. for peons at Rs. 10/-	..	..	..	10 × 8 × 12 = "	960
Linen, medicines, etc. at Rs. 700/- per annum each	..	..	..	700 × 8 = "	5,600
Distribution of milk for undernourished children; and articles of toilet at Rs. 1,000 each.	..	..	..	1,000 × 8 = "	8,000
Contingencies including diet for indoor patients, postage stamps, stationery, etc. at Rs. 400/- per annum each.	..	..	..	400 × 8 = "	3,200
(ii) 8 established in the 2nd year—					
8 midwives pay at Rs. 65/- per mensem	..	..	..	65 × 8 × 12 = "	6,240
8 Assistant Midwives at Rs. 42 per mensem	..	..	..	42 × 8 × 12 = "	4,032
8 Peons at Rs. 16/- per mensem each	..	..	..	16 × 8 × 12 = "	1,536
8 Part-time sweepers at Rs. 5/- per mensem	..	..	..	5 × 8 × 12 = "	480
P. T. A. for midwives at Rs. 30/- per mensem	..	..	..	30 × 8 × 12 = "	2,880
P. T. A. for peons at Rs. 10/- per mensem each	..	..	..	10 × 8 × 12 = "	960
Linen, medicines, etc. at Rs. 700/- per annum	..	..	..	700 × 8 = "	5,600
Distribution of milk for the undernourished children; and articles of toilet at Rs. 1,000/- per annum each.	..	..	..	1,000 × 8 = "	8,000
Contingencies including diet for indoor patients, postage stamps, stationery at Rs. 400/- per annum each.	..	..	..	400 × 8 = "	3,200
(iii) 16 established in the 3rd year—					
16 midwives Pay at Rs. 60/- per mensem each	..	..	..	60 × 16 × 12 = "	11,520
16 Assistant midwives at Rs. 40/- per mensem each	..	..	..	40 × 16 × 12 = "	7,680
16 Peons at Rs. 16/- each	..	..	..	16 × 16 × 12 = "	3,072
16 Part-time Sweepers at Rs. 5/- per mensem	..	..	..	5 × 16 × 12 = "	960
P. T. A. for 16 midwives at Rs. 30/- per mensem	..	..	..	30 × 16 × 12 = "	5,760
P. T. A. for peons at Rs. 10/- per mensem each	..	..	..	10 × 16 × 12 = "	1,920
Construction of Maternity Homes and quarters for the staff at Rs. 15,000/- each.	..	..	..	15,000 × 16 = "	2,40,000
Equipment for 4 beds at Rs. 700/- for each Maternity Home	..	..	..	700 × 16 = "	11,200
Linen, medicines, etc. at Rs. 700/- each	..	..	..	700 × 16 = "	11,200
Distribution of milk for the undernourished children; and articles of toilet at Rs. 1,000 each.	..	..	..	1,000 × 16 = "	16,000
Contingencies including diet for indoor patients, postage, stationery at Rs. 400/- per annum each.	..	..	..	400 × 16 = "	6,400

Assistant Midwives for domiciliary midwifery—

(i) 32 appointed in the 1st year. Pay at Rs. 44 per mensem each.	$44 \times 32 \times 12 = \text{Rs.}$	16,896
(ii) 64 appointed in the 2nd year. Pay at Rs. 42/- per mensem each.	$42 \times 64 \times 12 = \text{"}$	32,256
(iii) 64 appointed in the 3rd year. Pay Rs. 40/- per mensem each.	$40 \times 64 \times 12 = \text{"}$	30,720

160

P. T. A. of Assistant Midwives (160) at Rs. 25/- per mensem each.	$25 \times 160 \times 12 = \text{"}$	48,000
Peons (160) Pay at Rs. 16/- per mensem each	$16 \times 160 \times 12 = \text{"}$	30,720
P. T. A. of peons at Rs. 10/- per mensem each	$10 \times 160 \times 12 = \text{"}$	19,200
House-rent allowance for Assistant midwives at Rs. 5/- per mensem each	$5 \times 160 \times 12 = \text{"}$	9,600
House-rent allowance for peons at Rs. 5/- per mensem each	$5 \times 160 \times 12 = \text{"}$	9,600
Contingency including postage stamps, stationery, medicines, at Rs. 300/- per annum each.	$300 \times 16 = \text{"}$	4,800

Lady Health Visitors (8)—

Scale of pay Rs. 100—5—150	$100 \times 8 \times 12 = \text{"}$	9,600
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Peons to L. H. Visitors (16)—

Scale of pay Rs. 16—1/5—20	$16 \times 16 \times 12 = \text{"}$	3,072
P. T. A. for the Lady H. Visitors at Rs. 50/- per mensem	$50 \times 8 \times 12 = \text{"}$	4,800
P. T. A. for peons at Rs. 10/- per mensem each	$10 \times 16 \times 12 = \text{"}$	1,920
Construction of quarters and office for Lady Health Visitors and quarters for peons at Rs. 5,000/- each.	$5,000 \times 8 = \text{"}$	40,000
Contingencies at Rs. 200/- per annum each	$200 \times 8 = \text{"}$	1,600

Total .. Rs. 6,61,336

Non-Recurring Expenditure
Rs. 2,91,200Recurring Expenditure.
Rs. 3,70,136

IVth Year.

A. D. P. H. (1)—

Pay Rs. 490/- per mensem	$490 \times 12 = \text{Rs.}$	5,880
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Clerks (4)—

One Head Clerk Pay Rs. 110/- per mensem	$110 \times 12 = \text{"}$	1,320
One Senior Clerk Pay Rs. 85/- per mensem	$85 \times 12 = \text{"}$	1,020
Two Junior Clerks Pay Rs. 35/- per mensem	$35 \times 12 \times 2 = \text{"}$	840

Peons (4)—

Pay at Rs. 16/- per mensem	$16 \times 4 \times 12 = \text{"}$	768
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Allowances, etc.—

Compensatory Allowance for A. D. P. H. at Rs. 40/- per mensem.	$40 \times 12 = \text{"}$	480
Karachi Local Allowance for Head Clerk, at Rs. 25/- per mensem.	$25 \times 12 = \text{"}$	300
Karachi Local Allowance for Senior Clerk at Rs. 25 per mensem.	$25 \times 12 = \text{"}$	300
Karachi Local Allowance for 2 Junior Clerks at Rs. 20/- per mensem each.	$20 \times 12 = \text{"}$	240
Karachi Local Allowance for 4 peons	$4 \times 4 \times 12 = \text{"}$	192
House Rent Allowance for 4 peons	$4 \times 4 \times 12 = \text{"}$	192
Travelling Allowances		3,000
Contingencies including postage stamps, stationery, etc.		2,500
Office rent at Rs. 100/- per mensem		1,200

*Maternity Homes and C. W. Centres—**(i) 8 established in the 1st year—*

8 Midwives pay Rs. 75/- per mensem each	$75 \times 8 \times 12 = \text{"}$	7,200
8 Assistant Midwives Pay Rs. 46 per mensem	$46 \times 8 \times 12 = \text{"}$	4,416
8 Peons pay Rs. 20/- per mensem each	$20 \times 8 \times 12 = \text{"}$	1,920
8 part-time Sweepers at Rs. 5/- per mensem	$5 \times 8 \times 12 = \text{"}$	480

L (iv) 73—47

P. T. A. for Midwives Rs. 30/- per mensem	$30 \times 8 \times 12 =$ Rs.	2,880
P. T. A. for Peons at Rs. 10/- per mensem	$10 \times 8 \times 12 =$..	960
Linen and Medicines, etc., at Rs. 700/- per annum each	$700 \times 8 =$..	5,600
Distribution of milk for undernourished children and articles of toilet at Rs. 1,000 per annum for each	$1,000 \times 8 =$..	8,000
Contingencies including diet for indoor patients, postage, stamps and stationery at Rs. 400/- per annum for each.	$400 \times 8 =$..	3,200

(ii) 8 established in the 2nd year—

8 Midwives at Rs. 70/- per mensem each	$70 \times 8 \times 12 =$..	6,720
8 Assistant Midwives at Rs. 44/- per mensem	$44 \times 8 \times 12 =$..	4,224
8 Peons at Rs. 20 per mensem	$20 \times 8 \times 12 =$..	1,920
8 Part-time Sweepers at Rs. 5/- per mensem	$5 \times 8 \times 12 =$..	480
P. T. A. for Midwives at Rs. 30/- per mensem each	$30 \times 8 \times 12 =$..	2,880
P. T. A. for peons at Rs. 10/- per mensem	$10 \times 8 \times 12 =$..	960
Linen and Medicines, etc., at Rs. 700/- per annum each	$700 \times 8 =$..	5,600
Distribution of milk for the undernourished children and articles of toilet at Rs. 1,000/- per annum for each.	$1,000 \times 8 =$..	8,000
Contingencies including diet for indoor patients, postage stamps and stationery at Rs. 400 per annum for each.	$400 \times 8 =$..	3,200

(iii) 16 Maternity Homes in the 3rd year—

16 Midwives at Rs. 65/- pay per mensem each	$65 \times 16 \times 12 =$..	12,480
16 Assistant Midwives on pay at Rs. 42/- per mensem each.	$42 \times 16 \times 12 =$..	8,064
16 peons at Rs. 16/- pay per mensem	$16 \times 16 \times 12 =$..	3,072
16 Part-time Sweepers at Rs. 5/- each	$5 \times 16 \times 12 =$..	960
P. T. A. for 16 Midwives, at Rs. 30 per mensem	$30 \times 16 \times 12 =$..	5,760
P. T. A. for 16 peons at Rs. 10 per mensem	$10 \times 16 \times 12 =$..	1,920
Linen and medicines, etc., at Rs. 700/- per annum for each.	$700 \times 16 =$..	11,200
Distribution of Milk for the undernourished children and articles of toilet at Rs. 1,000/- per annum for each.	$1,000 \times 16 =$..	16,000
Contingencies including diet for indoor patients, postage, stamps and stationery at Rs. 400/- per annum each.	$400 \times 16 =$..	6,400

(iv) 16 Maternity Homes in the 4th year—

16 Midwives Pay Rs. 60/- per mensem	$60 \times 16 \times 12 =$..	11,520
16 Assistant Midwives at Rs. 40/- per mensem	$40 \times 16 \times 12 =$..	7,680
16 Peons at Rs. 16/- per mensem	$16 \times 16 \times 12 =$..	3,072
16 Partime Sweepers at Rs. 5/- per mensem	$5 \times 16 \times 12 =$..	960
P. T. A. for 16 Midwives at Rs. 30/- per mensem	$30 \times 16 \times 12 =$..	5,760
P. T. A. for 16 peons at Rs. 10 per mensem	$10 \times 16 \times 12 =$..	1,920
Linen and Medicines etc., at Rs. 700/- per annum for each.	$700 \times 16 =$..	11,200
Distribution of Milk for the undernourished children and articles of toilet at Rs. 1,000/- per annum for each	$1,000 \times 16 =$..	16,000
Contingencies including diet for indoor patients, postage stamps and stationery at Rs. 400/- each.	$400 \times 16 =$..	6,400
Construction of Maternity Homes quarters for the staff at Rs. 15,000 each.	$15,000 \times 16 =$..	2,40,000
Equipment for 4 beds at Rs. 700/- for each Maternity Home.	$700 \times 16 =$..	11,200

Assistant Midwives for domiciliary midwifery—

32 of the 1st year, 64 of the 2nd year year and 64 of the 3rd year—

(i) 32—Pay Rs. 46/- per mensem each	$46 \times 32 \times 12 =$..	17,664
(ii) 64—Pay Rs. 44/- per mensem each	$44 \times 64 \times 12 =$..	33,792
(iii) 64—Pay Rs. 42/- per mensem each	$42 \times 64 \times 12 =$..	32,256
(iv) 64 Pay Rs. 40/- per mensem each	$40 \times 64 \times 12 =$..	30,720
P. T. A. for Assistant Midwives (224) at Rs. 25/- per mensem.	$25 \times 224 \times 12 =$..	67,200
Peons for Assistant Midwives at Rs. 16/- pay per mensem ..	$224 \times 16 \times 12 =$..	43,008
P. T. A. for peons to Assistant Midwives at Rs. 10/- per mensem each.	$10 \times 224 \times 12 =$..	26,880
House rent Allowance for Assistant Midwives (224) at Rs. 5 per mensem each.	$5 \times 224 \times 12 =$..	13,440
House rent Allowance for peons to Assistant Midwives (224) at Rs. 5/- per mensem.	$5 \times 224 \times 12 =$..	13,440
Contingencies including postage and stationery and Medicines at Rs. 300/- per annum for each.	$300 \times 224 =$..	67,200

(ii) 8 Maternity Homes established in the 2nd year—

8 Midwives Rs. 75/- per mensem	..	..	75 × 8 × 12 = Rs.	7,200
8 Assistant Midwives Rs. 46 per mensem	..	..	46 × 8 × 12 = ..	4,416
8 Peons Rs. 16/- per mensem	..	..	16 × 8 × 12 = ..	1,536
8 Part-time sweepers Rs. 5/- per mensem	..	..	5 × 8 × 12 = ..	480
Linen, Medicines, Contingencies, etc. Rs. 700/-	..	..	700 × 8 = ..	5,600
P. T. A. for Midwives Rs. 30 per mensem	..	..	30 × 8 × 12 = ..	2,880
P. T. A. for Peons Rs. 10/- per mensem	..	..	10 × 8 × 12 = ..	960

(iii) 16 Midwives Rs. 70/- per mensem	..	..	70 × 16 × 12 = ..	13,440
16 Assistant Midwives Rs. 44/- per mensem	..	..	44 × 16 × 12 = ..	8,448
16 Peons at Rs. 16/- per mensem	..	..	16 × 16 × 12 = ..	3,072
16 Part-time sweepers Rs. 5/- per mensem	..	..	5 × 16 × 12 = ..	960
P. T. A. for 16 Midwives Rs. 30 per mensem	..	..	30 × 16 × 12 = ..	5,760
P. T. A. for 16 peons Rs. 10/- per mensem	..	..	10 × 16 × 12 = ..	1,920
Linen, Medicines, Contingencies Rs. 700/-	..	..	700 × 16 = ..	11,200

(iv) 16 Maternity Homes established in the IVth Year—

16 Midwives Rs. 65/- per mensem	..	..	65 × 16 × 12 = ..	12,480
16 Assistant Midwives Rs. 42/- per mensem	..	..	42 × 16 × 12 = ..	8,064
16 Peons Rs. 16 per mensem	..	..	16 × 16 × 12 = ..	3,072
16 Part-time sweepers Rs. 5 per mensem	..	..	5 × 16 × 12 = ..	960
P. T. A. for 16 midwives Rs. 30 per mensem	..	..	30 × 16 × 12 = ..	5,760
P. T. A. for 16 peons Rs. 10/- per mensem	..	..	10 × 16 × 12 = ..	1,920
Linen, Medicines and Contingencies	..	..	700 × 16 = ..	11,200

(v) Maternity Homes and Centres in the VIth Year.

13 midwives Rs. 60 per mensem	..	..	60 × 13 × 12 = Rs.	9,360
13 Assistant midwives Rs. 40 per mensem	..	..	40 × 13 × 12 = ..	6,240
13 Peons Rs. 16 per mensem	..	..	16 × 13 × 12 = ..	2,496
13 Part-time sweepers Rs. 5/-	..	..	5 × 13 × 12 = ..	780
P. T. A. for 13 midwives	..	..	30 × 13 × 12 = ..	4,680
P. T. A. for 13 peons Rs. 10/-	..	..	10 × 13 × 12 = ..	1,560
Construction of maternity homes, quarters for the staff at Rs. 15,000/- each.			15,000 × 13 = ..	1,95,000
Equipment for 4 beds at Rs. 700/- each	..	..	700 × 13 = ..	9,100
Distribution of milk for the undernourished children and articles of toilet at Rs. 1,000/- per annum for each centre.			1,000 × 61 = ..	61,000
Contingencies including diet for indoor patients, postage, stationery at Rs. 400/- per annum for each.			400 × 61 = ..	24,400
Linen, medicines, contingencies	..	..	700 × 13 = ..	9,100

8. Extent to which the scheme will be productive. In the absence of any standing epidemic staff, there is great difficulty in combating epidemic diseases such as cholera. At present either the Medical Officers in-charge of the dispensaries or those on general duty at the Civil hospitals do this work, but this arrangement is not satisfactory. The Medical Officers so deputed, apart from bearing personal inconvenience would be losing their private practice. Naturally they would try to get back to their places within as short a time as possible. The proposed epidemic staff would be available and could be detailed for any length of time. If necessary, Medical Officers from other districts could also be concentrated in any area. When there are no epidemics, these Medical Officers would do anti-malaria work, as malaria is no more a seasonal disease. The temporary medical officers who are usually employed, do the work haphazardly. Some of them may be quite new to the province.
9. Extent to which the Scheme will cater for returned service personnel. Medical licentiates and the peons with war service could be absorbed under the proposed Scheme. If the requisite number is not available, appointments would be filled in by inviting applications.
10. General description of the plant, equipment or stores— Nil.
11. Labour force required in the case of the larger schemes. Labour force would be required for the construction of the quarters for the Epidemic Medical Officers and their peons.
12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel. }
13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five-year periods. Nil.
14. Any other remarks or information .. }

Statement giving the details of expenditure involved in Scheme
No. 110 (Item 7 of the Scheme).

—: 0 :—

Ist Year.

There will be no expenditure in the 1st year as the Epidemic Medical Officers will be appointed in the 2nd Year.

IIInd Year.

Epidemic Medical Officers (16)—

Scale of pay Rs. 150—7—220—8—300	150 × 16 × 12 = Rs.	28,800
Special Pay at Rs. 25/- per mensem each, Compensation for loss of private practice at Rs. 25/- per mensem each.	50 × 16 × 12 = ..	9,600
House rent allowance in lieu of free quarters at Rs. 20/- per mensem each.	20 × 16 × 12 = ..	3,840
P. T. A. at Rs. 50/- per mensem each	50 × 16 × 12 = ..	9,600

Peons for the the Epidemic Medical Officers (16)—

Scale of pay Rs. 16—1/5—20 with a starting pay Rs. 20/- per mensem each.	20 × 16 × 12 = ..	3,840
P. T. A. for peons at Rs. 10/- per mensem each	10 × 16 × 12 ..	1,920
House rent allowance to peons at Rs. 4/- per mensem each ..	4 × 16 × 12 = ..	768
Office Allowance for 8 Epidemic Medical Officers with Headquarters at places other than at the District Headquarters at Rs. 10/- per mensem each.	10 × 8 × 12 = ..	960
Medicines for the Epidemic Medical Officers at Rs. 1,000/- per annum each.	1,000 × 16 = ..	16,000
Contingencies including postage stamps, stationery, etc. at Rs. 250 per annum each.	250 × 16 = ..	4,000

Total .. Rs. 79,328

Non-recurring Expenditure.
Nil.

Recurring Expenditure.
Rs. 79,328

IIIrd Year.

Epidemic Medical Officers (16)—

Pay Rs. 157/- per mensem each	157 × 16 × 12 = Rs.	30,144
Special pay at Rs. 25/- per mensem each. Compensation for loss of private practice at Rs. 25/- per mensem.	50 × 16 × 12 = ..	9,600
House rent allowance in lieu of free quarters at Rs. 20/- per mensem each.	20 × 16 × 12 = ..	3,840
P. T. A. at Rs. 50/- per mensem each	50 × 16 × 12 = ..	9,600

Peons for Epidemic Medical Officers (16)—

Pay Rs. 20/- per mensem each	20 × 16 × 12 = ..	3,840
P. T. A. for peons at Rs. 10/- per mensem each	10 × 16 × 12 = ..	1,920
House rent allowance to peons at Rs. 4/- per mensem each ..	4 × 16 × 12 = ..	768
Office allowance for 8 Epidemic Medical Officers with Headquarters at places other than at the District Headquarters at Rs. 10 per mensem.	10 × 8 × 12 = ..	960
Medicines for the Epidemic Medical Officers at Rs. 1,000/- per annum each.	1,000 × 8 = ..	8,000
Contingencies including postage stamps, stationery, etc. at Rs. 250 per annum.	250 × 16 = ..	4,000

Total .. Rs. 72,672

Non-recurring Expenditure.
Nil.

Recurring Expenditure.
Rs. 72,672.

IVth Year.

Epidemic Medical Officers (16)—

Pay Rs. 164/- per mensem each	$164 \times 16 \times 12 = \text{Rs.}$	31,488
Special Pay at Rs. 25/- per mensem each. Compensation for loss of private practice at Rs. 25/- per mensem each.	$50 \times 16 \times 12 = \text{,,}$	9,600
House rent allowance in lieu of free quarters at Rs. 20 per mensem each.	$20 \times 16 \times 12 = \text{,,}$	3,840
P. T. A. at Rs. 50/- per mensem each	$50 \times 16 \times 12 = \text{,,}$	9,600

Peons for Epidemic Medical Officers (16)—

Pay Rs. 20/- per mensem each	$20 \times 16 \times 12 = \text{,,}$	3,840
P. T. A. for peons at Rs. 10/- per mensem each	$10 \times 16 \times 12 = \text{,,}$	1,920
House rent allowance to the peons at Rs. 4/- per mensem each.	$4 \times 16 \times 12 = \text{,,}$	768

Office Allowance for 8 Epidemic Medical Officers with head-quarters at places other than at the District headquarters at Rs. 10/- per mensem each.	$10 \times 8 \times 12 = \text{,,}$	960
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Medicines for the Epidemic Medical Officers at Rs. 1,000/- per annum each.	$1,000 \times 16 = \text{,,}$	16,000
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Contingencies including postage stamps at Rs. 250/- per annum each.	$250 \times 16 = \text{,,}$	4,000
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Total .. Rs. 82,016

Non-recurring Expenditure.
Nil.

Recurring Expenditure.
Rs. 82,016.

Vth Year.

Construction of quarters and offices for the Epidemic Medical Officers and their peons at Rs. 8,000/- each	$8,000 \times 16 = \text{Rs.}$	1,28,000
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Epidemic Medical Officers (16)—

Pay Rs. 171/- per mensem each	$171 \times 16 \times 12 = \text{,,}$	32,832
Special pay at Rs. 25/- per mensem each. Compensation for loss of private practice at Rs. 25/- per mensem each.	$50 \times 16 \times 12 = \text{,,}$	9,600
House rent allowance in lieu of free quarters for six months at Rs. 20/- per mensem each.	$20 \times 16 \times 6 = \text{,,}$	1,920
P. T. A. at Rs. 50/- per mensem each	$50 \times 16 \times 12 = \text{,,}$	9,600

Peons for Epidemic Medical Officers (16)—

Pay at Rs. 20/- per mensem each	$20 \times 16 \times 12 = \text{,,}$	3,840
P. T. A. of the peons at Rs. 10/- per mensem	$10 \times 16 \times 12 = \text{,,}$	1,920
House rent for peons for six months at Rs. 4/- per mensem each.	$4 \times 16 \times 6 = \text{,,}$	384

Office allowance for 8 Epidemic Medical Officers for six months at Rs. 10/- per mensem each.	$10 \times 8 \times 6 = \text{,,}$	480
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Medicines for the Epidemic Medical Officers at Rs. 1,000/- per annum each.	$1,000 \times 16 = \text{,,}$	16,000
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Contingencies including postage stamps at Rs. 250/- per annum each.	$250 \times 16 = \text{,,}$	4,000
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Total .. Rs. 2,08,576

Non-recurring Expenditure,
Rs. 1,28,000

Recurring Expenditure.
Rs. 80,576.

III.

Field Investigation Unit.

The object of the Scheme is to combat disease scientifically. It is contemplated that whenever an outbreak of epidemic is reported, the Unit should proceed to the affected area to investigate. Apart from this, the Unit would be required to carry out scientific investigation in respect of the high incidence of typhoid, dysentery, diarrhoea, etc., collect statistics, study them and issue forecasts of epidemics. The Scheme is proposed to be commenced with effect from the 3rd year of the post-war quinquennium. For an effective control of epidemics the setting up of a Unit like the one described above may be considered essential.

Whole Province.

The Unit would be established in the third year.

1. *Officer In-charge of the Unit* (1).—(M.B., B.S., D.P.H., D.T.M. & H., and practical experience in public health investigation work.)
2. *Medical Assistant* (1).—Medical Licentiate.
3. *Media Maker* (1).—A qualified compounder having practical experience in the preparation of media or a matriculate having practical experience in the preparation of media.
4. *Laboratory Assistant* (1).—Must have studied upto matric, preference would be given to one having practical experience of laboratory work.
5. *Laboratory Attendants* (2).—Must have studied upto 4th standard English, having practical experience of laboratory work.
6. *Peons* (4).—Must be intelligent.
7. *Clerks* (2).—Matriculation Examination.

1. Serial No. of Scheme
2. Name of Scheme
3. Brief description of Scheme
4. Areas selected for application, if applicable
5. Time expected to be taken for execution ..
6. Brief details of staff required and how it is proposed to be obtained.

7. Rough Estimate of cost at existing rates—

	1st year Rs.	2nd year Rs.	3rd year Rs.	4th year Rs.	5th year Rs.	Total.
(i) Capital	Nil	Nil	51,000	Nil	Nil	51,000
(ii) Recurring	Nil	Nil	20,652	21,132	21,732	62,516

[For details, please see the statement at pages 380—382 *post*].
It would enable the health authorities to direct their efforts in the right way in combating the diseases. It will improve the general health of the province.

8. Extent to which the Scheme would be productive.

Persons with war service and with the requisite qualifications would be given preference.

9. Extent to which the Scheme will cater for returned service personnel.

General description of the plant, equipment, or stores.—

Laboratory equipment and fitting. Most of the material would be imported from abroad.

(i) to be imported from abroad.
(ii) to be obtained in India.

11. Labour force required in the case of the larger Schemes.

Labour force would be required for the construction of the laboratory building.

12. Whether the assistance of the Central Government is likely to be required for obtaining the laboratory equipment.

Nil.

13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five-year periods.

Nil.

14. Any other remarks or information

Statement showing the details of expenditure involved in Scheme
No. III (Item No. 7 of the Scheme).

————— : 0 : —————

Ist and IInd Years.

There will be no expenditure during the first two years as the unit would be established in the third year.

IIIrd Year.

<i>Officer In-charge of the Unit (1)—</i>			
Scale of pay Rs. 350—20—550—30—700—50—750 ..	350 × 12 = Rs.	4,200	
<i>Medical Assistant (1)—</i>			
Scale of pay Rs. 150—7—220—3—300	150 × 12 = ..	1,800	
<i>Media Maker (1)—</i>			
Scale of pay Rs. 40—4—100	40 × 12 = ..	480	
<i>Laboratory Assistant (1)—</i>			
Scale of pay Rs. 35—2—75	35 × 12 = ..	420	
<i>Laboratory Attendants (2)—</i>			
Scale of pay Rs. 25—1—40	25 × 2 × 12 = ..	600	
<i>Peons (4)—</i>			
Scale of pay Rs. 16—1/5—20	16 × 4 × 12 = ..	768	
<i>Clerks (2)—</i>			
(i) Scale of pay Rs. 80—5/2—95	80 × 12 = ..	960	
(ii) Scale of pay Rs. 25—5/2—55	30 × 12 = ..	360	
<i>Allowances, etc.—</i>			
Compensatory Allowance for the Officer In-charge of the Unit at Rs. 35/- per mensem.	35 × 12 = ..	420	
Karachi Local Allowance for the Medical Assistant at Rs. 30 per mensem	30 × 12 = ..	360	
Karachi Local Allowance for the Media Maker at Rs. 15/- per mensem.	15 × 12 = ..	180	
Karachi Local Allowance for the Laboratory Assistant at Rs. 10/- per mensem.	10 × 12 = ..	120	
Karachi Local Allowance Laboratory Attendants at Rs. 10/- per mensem.	10 × 2 × 12 = ..	240	
Karachi Local Allowance for the Clerk at 20/- per mensem ..	20 × 12 = ..	240	
Karachi Local Allowance for the Clerk at Rs. 10 per mensem	10 × 12 = ..	120	
Karachi Local Allowance for the peons at Rs. 4/- per mensem	4 × 4 × 12 = ..	192	
House rent allowance for peons at Rs. 4/- per mensem each ..	4 × 4 × 12 = ..	192	
Construction of office and Laboratory		30,000	
Equipment and fitting for the Laboratory		20,000	
Chemicals and apparatus		5,000	
Travelling Allowance		2,500	
Contingencies including postage, stationery, etc.		1,500	
Typewriter and Duplicator		1,000	
Total .. Rs.		71,652	

Non-recurring Expenditure.

Rs. 51,000.

Recurring Expenditure.

Rs. 20,652

IVth Year.

Pay of the Officer In-charge of the Unit at Rs. 370/- per mensem.	370 × 12 = Rs.	4,440
<i>Medical Assistant (1)—</i>		
Pay at Rs. 157/- per mensem	157 × 12 = ..	1,884

<i>Media Maker (1)—</i>				
Pay at Rs. 44/- per mensem			$44 \times 12 =$ Rs.	528
<i>Laboratory Assistant (1)—</i>				
Pay at Rs. 37/- per mensem			$37 \times 12 =$ „	444
<i>Laboratory Attendants (2)—</i>				
Pay at Rs. 26/- per mensem each			$26 \times 2 \times 12 =$ „	624
<i>Peons (4)—</i>				
Pay at Rs. 16/- per mensem each			$16 \times 4 \times 12 =$ „	768
<i>Clerks (2)—</i>				
(i) Pay at Rs. 80/- per mensem			$80 \times 12 =$ „	960
(ii) Pay at Rs. 30/- per mensem			$30 \times 12 =$ „	360
<i>Allowances, etc.—</i>				
Compensatory Allowance for the Officer at Rs. 35 per mensem.			$35 \times 12 =$ „	420
Karachi Local Allowance for the Medical Assistant at Rs. 30/- per mensem.			$30 \times 12 =$ „	360
Karachi Local Allowance for the Media Maker at Rs. 15/- per mensem.			$15 \times 12 =$ „	180
Karachi Local Allowance for the Laboratory Assistant Rs. 15/- per mensem.			$15 \times 12 =$ „	180
Karachi Local Allowance for the Laboratory Attendants at Rs. 10/- per mensem.			$10 \times 2 \times 12 =$ „	240
Karachi Local Allowance for the Clerk at Rs. 20/- per mensem.			$20 \times 12 =$ „	240
Karachi Local Allowance for the Clerk at Rs. 10/- per mensem.			$10 \times 12 =$ „	120
Karachi Local Allowance for the Peons at Rs. 4/- per mensem each.			$4 \times 4 \times 12 =$ „	192
House rent Allowance to peons at Rs. 4/- per mensem each			$4 \times 4 \times 12 =$ „	192
Chemicals and apparatus			„	5,000
Travelling Allowances			„	2,500
Contingencies including postage, stationery, etc. ..			„	1,500
Total .. Rs.				<u>21,132</u>

Non-recurring Expenditure.
Nil.

Recurring Expenditure.
Rs. 21,132

Vth Year.

<i>Officer In-charge of the Unit (1)—</i>				
Pay at Rs. 390/- per mensem			$390 \times 12 =$ Rs.	4,680
<i>Medical Assistant (1)—</i>				
Pay at Rs. 164/- per mensem			$164 \times 12 =$ „	1,968
<i>Media Maker (1)—</i>				
Pay at Rs. 48/- per mensem			$48 \times 12 =$ „	576
<i>Laboratory Assistant (1)—</i>				
Pay Rs. 39/- per mensem			$39 \times 12 =$ „	468
<i>Laboratory Attendants (2)—</i>				
Pay at Rs. 27/- per mensem each			$27 \times 2 \times 12 =$ „	648
<i>Peons (4)—</i>				
Pay Rs. 16/- per mensem each			$16 \times 4 \times 12 =$ „	768
<i>Clerks (2)—</i>				
(i) Pay Rs. 85/- per mensem			$85 \times 12 =$ „	1,020
(ii) Pay Rs. 35/- per mensem			$35 \times 12 =$ „	420

Allowances, etc—

Compensatory Allowance for the Officer In-charge of the Unit at Rs. 35/- per mensem.	35 × 12 = Rs.	420
Karachi Local Allowance for the Medical Assistant at Rs. 30/- per mensem.	30 × 12 = „	360
Karachi Local Allowance for the Media Maker at Rs. 15/- per mensem.	15 × 12 = „	180
Karachi Local Allowance for the Laboratory Assistant at Rs. 15/- per mensem.	15 × 12 = „	180
Karachi Local Allowance for the Laboratory Attendants at Rs. 10/-	10 × 2 × 12 = „	240
Karachi Local Allowance for the Clerk at Rs. 25/- per mensem.	25 × 12 = „	300
Karachi Local Allowance for the Clerk at Rs. 10/- per mensem.	10 × 12 = „	120
Karachi Local Allowance for the Peons at Rs. 4/- per mensem each.	4 × 4 × 12 = „	192
House rent allowance for peons at Rs. 4/- per mensem each..	4 × 4 × 12 = „	192
Chemicals and apparatus	„	5,000
Travelling Allowance	„	2,500
Contingencies including postage, stationery, etc.	„	1,500
	Total .. Rs.	<u>21,732</u>

Non-recurring Expenditure.
Nil.

Recurring Expenditure.
Rs. 21,732.

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|----|-----------------------------|----|----|--|
| 1. | Serial No. of Scheme | .. | .. | 112. |
| 2. | Name of Scheme | .. | .. | Nutrition Survey Unit. |
| 3. | Brief description of Scheme | .. | .. | <p>The function of this Unit would be to study the composition of foods of local importance, to carry out diet surveys, to investigate the incidence of malnutrition and deficiency diseases and to attend to all matters of health associated with nutrition. The Unit would be required to give attention to nutrition of the 'vulnerable' groups, <i>e.g.</i>, infants, children, expectant and nursing mothers and school-going children. It is intended to serve as a sort of 'Information Bureau on nutrition and be responsible for providing material for educational propaganda. It would advise on all matters pertaining to diet and maintain liaison with the departments of Food, Education, Agriculture, Veterinary and Fisheries as well as with local bodies and private organisations for the purpose of co-ordinating food nutrition work. The importance of the early establishment of such a Unit cannot be over-emphasised. Government have already set up a Committee of medical men to function as an Advisory Committee for food nutrition with a view to evolve a dietary wide enough to cater to the requirements of the poor as well as the rich at a cost well within the reach of all. The setting up of the proposed organisation would therefore, give a fillip to the work of the above mentioned Advisory Committee, and by subjecting the former's findings to laboratory tests bring them on a scientific footing.</p> <p>Whole Province.</p> <p>The Unit would be established in the third year.</p> |
4. Areas selected for application, if applicable..
 5. Time expected to be taken for execution ..

6. Brief details of staff required and how it is proposed to be obtained.

1. *Assistant Director of Public Health I/c Nutrition Survey Unit (1)*—M.B.,B.S., D.P.H., and practical experience of Nutrition Survey Work.
2. *Medical Officer (1)*—Medical Licentiate.
3. *Clerks (2)*—Matriculation Examination.
4. *Health Inspectors (2)*—Sanitary Inspectors' Examination.
5. *Chemist (1)*—B.Sc., with chemistry as principal subject and practical experience of food analysis.
6. *Food Jamadars (2)*—Studied upto IVth Standard English and intelligent.

7. *Peons (4)*—Should be intelligent.

The posts will be filled by the normal process of recruitment.

7. Rough estimate of cost at existing rates—

	1st year	2nd year	3rd year	4th year	5th year	Total.
(i) Capital	Rs. Nil.	Rs. Nil.	Rs. 32,000	Rs. Nil.	Rs. Nil.	Rs. 32,000
(ii) Recurring	Rs. Nil.	Rs. Nil.	Rs. 20,692	Rs. 21,322	Rs. 22,102	Rs. 64,116

[For details, please see the statement at pages 385—387 post.]
It will raise the general standard of health.

8. Extent to which the Scheme would be productive.

9. Extent to which the Scheme will cater for returned service personnel.

10. General description of the plant, equipment, or stores—

- (i) to be imported from abroad.
- (ii) to be obtained in India.

11. Labour force required in the case of the larger schemes.

12. Whether assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.

13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.

14. Any other remarks or information

The posts of clerks, Food Jamadars and peons would be available for returned service personnel.

Labour force would be required for the construction of the office of the Unit.

Nil.

Unit.

Nil.

Nil.

Nil.

Statement giving the details of expenditure involved in Scheme
No. 112 (Item No. 7 of the Scheme).

— : 0 : —

Ist and IIInd Years.

There will be no expenditure during the first two years as the Nutrition Survey Unit would be established in the third year.

IIIrd. Year.

Assistant Director of Public Health In-charge of the Nutrition
Survey Unit (1)—

Scale of pay Rs. 400—25—550—30—700—50—850 .. $400 \times 12 = \text{Rs.}$ 4,800

Medical Officer (1)—

Scale of pay Rs. 150—7—220—8—300 $150 \times 12 =$ „ 1,800

Clerks (2)—

(i) Scale of pay Rs. 95—5—125 $95 \times 12 =$ „ 1,140

(ii) Scale of pay Rs. 25—5/2—55 $30 \times 12 =$ „ 360

* Health Inspectors (2)—

Scale of pay Rs. 70—4—90—5—140—6—170 $70 \times 2 \times 12 =$ „ 1,680

Chemist (1)—

Scale of pay Rs. 120—8—280 $120 \times 12 =$ „ 1,440

Food Jamadars (2)—

Scale of pay Rs. 25—1—40 $25 \times 2 \times 12 =$ „ 600

Peons (4)—

Scale of pay Rs. 16—1/5—20 $16 \times 4 \times 12 =$ „ 768

Allowances, etc.—

Compensatory Allowance for the Officer at Rs. 35 per mensem $35 \times 12 =$ „ 420

Karachi Local Allowance to the Medical Officer at Rs. 30/- per mensem. $30 \times 12 =$ „ 360

Karachi Local Allowance to the Clerk at Rs. 25/- per mensem $25 \times 12 =$ „ 300

Karachi Local Allowance for the Clerk at Rs. 10/- per mensem. $10 \times 12 =$ „ 120

Karachi Local Allowance for the Health Inspectors at Rs. 20/- per mensem each. $20 \times 2 \times 12 =$ „ 480

Karachi Local Allowance for the Chemist at Rs. 25 per mensem. $25 \times 12 =$ „ 300

Karachi Local Allowance for the Food Jamadars at Rs. 10/- per mensem each. $10 \times 2 \times 12 =$ „ 240

Karachi Local Allowance for the Peons at Rs. 4/- per mensem each. $4 \times 4 \times 12 =$ „ 192

House rent allowance to peons at Rs. 4 per mensem .. $4 \times 4 \times 12 =$ „ 192

Travelling Allowances „ 3,000

Office furniture, typewriter and duplicator „ 2,000

Contingent expenditure including chemicals, apparatus, postage, stationery, etc. „ 2,500

Construction of office and small laboratory with fittings „ 30,000

Total .. Rs. 52,692

Non-recurring Expenditure.

Rs. 32,000

Recurring Expenditure.

Rs. 20,692

IVth Year.

Assistant Director of Public Health In-charge Nutrition Survey

<i>Unit—(1)—</i>					
Pay at Rs. 425/- per mensem ..	..	..	..	$425 \times 12 = \text{Rs.}$	5,100
<i>Medical Officer (1)—</i>					
Pay at Rs. 157/- per mensem ..	..	..	..	$157 \times 12 = \text{Rs.}$	1,884
<i>Clerks (2)—</i>					
(i) Pay at Rs. 95/- per mensem ..	..	..	..	$95 \times 12 = \text{Rs.}$	1,140
(ii) Pay at Rs. 30/- per mensem ..	..	..	..	$30 \times 12 = \text{Rs.}$	360
<i>Health Inspectors (2)—</i>					
Pay at Rs. 74/- per mensem each ..	..	..	..	$74 \times 2 \times 12 = \text{Rs.}$	1,776
<i>Chemist (1)—</i>					
Pay at Rs. 128/- per mensem ..	..	..	..	$128 \times 12 = \text{Rs.}$	1,536
<i>Food Jamadars (2)—</i>					
Pay at Rs. 26/- per mensem each ..	..	..	..	$26 \times 2 \times 12 = \text{Rs.}$	624
<i>Peons (4)—</i>					
Pay at Rs. 16/- per mensem each ..	..	..	..	$16 \times 4 \times 12 = \text{Rs.}$	768
<i>Allowances, etc.—</i>					
Compensatory Allowance to the Officer at Rs. 37-8-0 per mensem.				$37\frac{1}{2} \times 12 = \text{Rs.}$	450
Karachi Local Allowance to the Medical Officer at Rs. 30/- per mensem.				$30 \times 12 = \text{Rs.}$	360
Karachi Local Allowance to the Clerk at Rs. 25/- per mensem.				$25 \times 12 = \text{Rs.}$	300
Karachi Local Allowance of the Clerk at Rs. 10/- per mensem.				$10 \times 12 = \text{Rs.}$	120
Karachi Local Allowance for the Health Inspectors at Rs. 20 per mensem.				$20 \times 12 \times 2 = \text{Rs.}$	480
Karachi Local Allowance for the Chemist at Rs. 25/- per mensem.				$25 \times 12 = \text{Rs.}$	300
Karachi Local Allowance for the Food Jamadars at Rs. 10/- per mensem.				$10 \times 2 \times 12 = \text{Rs.}$	240
Karachi Local Allowance for the Peons at Rs. 4/- per mensem.				$4 \times 4 \times 12 = \text{Rs.}$	192
House rent allowance to the peons at Rs. 4/- per mensem each.				$4 \times 4 \times 12 = \text{Rs.}$	192
Travelling Allowances .. .. .	..	..	..	..	3,000
Contingent expenditure including postage, stationery, chemicals and apparatus, etc.				..	2,500
				Total .. Rs.	<u>21,322</u>

Non-recurring expenditure.
Nil.

Recurring Expenditure.
Rs. 21,322

Vth Year.

Assistant Director of Public Health In-charge Nutrition Survey

<i>Unit (1)—</i>					
Pay at Rs. 450/- per mensem ..	..	..	..	$450 \times 12 = \text{Rs.}$	5,400
<i>Medical Officer (1)—</i>					
Pay at Rs. 164/- per mensem ..	..	..	..	$164 \times 12 = \text{Rs.}$	1,968
<i>Clerks (2)—</i>					
(i) Pay Rs. 105 per mensem ..	..	..	..	$105 \times 12 = \text{Rs.}$	1,260
(ii) Pay Rs. 35/- per mensem	$35 \times 12 = \text{Rs.}$	420

Health Inspectors (2)—

Pay at Rs. 78/- per mensem each	$78 \times 2 \times 12 = \text{Rs.}$	1,872
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Chemist (1)—

Pay at Rs. 136/- per mensem	$136 \times 12 =$	1,632
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Food Jamadars (2)—

Pay at Rs. 27/- per mensem each	$27 \times 2 \times 12 =$	648
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Peons (4)—

Pay at Rs. 16/- per mensem	$16 \times 4 \times 12 =$	768
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Allowances, etc.—

Compensatory Allowance for the Officer at Rs. 37-8-0 per mensem.				$37\frac{1}{2} \times 12 =$	450
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Karachi Local Allowance to the Medical Officer at Rs. 30/- per mensem.				$30 \times 12 =$	360
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Karachi Local Allowance for the Clerk at Rs. 25/- per mensem.				$25 \times 12 =$	300
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Karachi Local Allowance for the Clerk at Rs. 10/- per mensem.				$10 \times 12 =$	120
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Karachi Local Allowance for the Health Inspectors at Rs. 20/- per mensem.				$20 \times 2 \times 12 =$	480
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Karachi Local Allowance for the Chemist at Rs. 25 per mensem.				$25 \times 12 =$	300
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Karachi Local Allowance for the Food Jamadars at Rs. 10/- per mensem.				$10 \times 2 \times 12 =$	240
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Karachi Local Allowance for the Peons at Rs. 4/- per mensem.				$4 \times 4 \times 12 =$	192
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House rent allowance to the peons at Rs. 4/- per mensem each.				$4 \times 4 \times 12 =$	192
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Travelling Allowances	3,000
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Contingent expenditure including postage, stationery, chemicals and apparatus, etc.				..	2,500
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Total	..	Rs.	<u>22,102</u>
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Non-recurring Expenditure.
Nil.

Recurring Expenditure.
Rs. 22,102

1.	Serial No. of Scheme	113.
2.	Name of Scheme	..	..	HEALTH UNIT.
3.	Brief description of Scheme	..	..	The object of the Scheme is to establish in this Province a Health Unit. The Scheme has already been approved by Government tentatively but could not be proceeded with on account of war. The Scheme would enable concentration of public health work in a limited area. The Unit is also intended to afford facilities for field training to the public health staff of Government, local bodies and the organisations interested in public health work. Correctly speaking, the Scheme should form part of the Maternity Scheme and should therefore, be merged into that Scheme.

Nawabshah District.

- The Unit would be established in the 4th year.
1. *Medical Officer J/c. of the Unit.*—Medical graduate possessing diploma in Public Health.
 2. *Lady Doctor* (1)—Medical Licentiate.
 3. *Health Visitors* (4)—Qualified and registered Health Visitors.
 4. *Midwives* (8)—Qualified and registered Midwives.
 5. *Sanitary Inspectors* (4)—Those who have passed the Sanitary Inspectors Examination.
 6. *Clerk* (1)—Matriculation Examination.
 7. *Peons* (2)—Intelligent persons.
- The staff will be procured by the normal process of recruitment.

7. Rough estimate of cost at existing rates—

	1st year	2nd year	3rd year	4th year	5th year	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
(i) Capital	Nil	Nil	Nil	50,000	Nil	50,000
(ii) Recurring	..	Nil	Nil	34,380	34,568	68,948

[For details, please see the statement at pages 390—391 *post.*]

8. Extent to which the Scheme will cater for returned service personnel. Such returned service personnel as possesses the requisite qualification would be employed under the Scheme.
9. Extent to which the Scheme will be productive. The Scheme would enable the concentrated public health work to be carried out in a limited area intensively. The Unit would afford facilities of field training to the regular public health staff and to the staff of the local bodies or organisations interested in public health work.

10. General description of plant, equipment or stores—
 (i) to be imported from abroad. } The necessary material would be obtainable in India.
 (ii) to be obtained in India.

11. Labour force required in the case of the Labour force would be required for the construction of the buildings.
 larger Schemes.

12. Whether assistance of the Central Government is likely to be required for obtaining materials, machinery and technical personnel. } Nil.

13. Brief indication where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.

14. Any other remarks or information.

Statement giving the details of expenditure involved in Scheme
No. 113 (Item No. 7 of the Scheme).

Ist, IIInd and IIIrd Years.

There would be no expenditure during the first three years as the Health Unit would be established in the fourth year.

IVth Year.

<i>Medical Officer In-charge of the Health Unit (1)—</i>			
Scale of pay Rs. 350—20—550—30—700—50—750—E.B. at Rs. 550 and Rs. 700.	350 X 12 = Rs.	4,200	
<i>Lady Doctor (1)—</i>			
Scale of pay Rs. 150—7—200—8—300	150 X 12 = ..	1,800	
<i>Health Visitors (4)—</i>			
Scale of Pay Rs. 100—5—150	100 X 4 X 12 = ..	4,800	
<i>Midwives (8)—</i>			
Scale of pay Rs. 60—5—100	60 X 8 X 12 = ..	5,760	
<i>Sanitary Inspectors (4)—</i>			
Scale of pay Rs. 55—3—100—5—110	55 X 4 X 12 = ..	2,640	
<i>Clerks (1)—</i>			
Scale of pay Rs. 80—5/2—95	80 X 12 = ..	960	
<i>Peons (2)—</i>			
Scale of pay Rs. 16—1/5—20 with a maximum pay of Rs. 20/- per mensem.	20 X 2 X 12 = ..	480	
<i>Sweeper (1)—</i>			
Pay Rs. 30/- per mensem	30 X 12 = ..	360	
<i>Allowances, etc.—</i>			
P. T. A. for the Medical Officer at Rs. 100 per mensem ..	100 X 12 = ..	1,200	
P. T. A. for the Lady Doctor at Rs. 100 per mensem ..	100 X 12 = ..	1,200	
P. T. A. for the Health Visitors at Rs. 50/- per mensem ..	50 X 4 X 12 = ..	2,400	
P. T. A. for Midwives at Rs. 30/- per mensem ..	30 X 8 X 12 = ..	2,880	
P. T. A. for Sanitary Inspectors at Rs. 25/- per mensem ..	25 X 4 X 12 = ..	1,200	
Medical requisites		1,000	
Propaganda material		1,000	
Furniture		1,000	
Contingencies including postage and stationery		1,500	
Quarters for the Unit		50,000	
Total .. Rs.		84,380	

Non-recurring Expenditure.
Rs. 50,000

Recurring Expenditure.
Rs. 34,380

Vth Year.

Health Unit.

<i>Medical Officer In-charge of the Health Unit (1)—</i>			
Pay Rs. 370/- per mensem	370 X 12 = Rs.	4,440	
<i>Lady Doctor (1)—</i>			
Pay Rs. 157/- per mensem	157 X 12 = ..	1,884	
<i>Health Visitors (4)—</i>			
Pay Rs. 105/- per mensem	105 X 4 X 12 = ..	5,040	

Midwives (8)—

Pay Rs. 65/- per mensem	$65 \times 8 \times 12 = \text{Rs.}$	6,240
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Sanitary Inspectors (4)—

Pay Rs. 58/- per mensem	$58 \times 4 \times 12 = ,,$	2,784
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Clerk (1)—

Pay Rs. 80/- per mensem	$80 \times 12 = ,,$	960
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Peons (2)—

Pay Rs. 20/- each per mensem	$20 \times 2 \times 12 = ,,$	480
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Sweeper (1)—

Pay Rs. 30/- per mensem	$30 \times 12 = ,,$	360
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Allowances, etc—

P. T. A. for the Medical Officer at Rs. 100 per mensem	$100 \times 12 = ,,$	1,200
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P. T. A. for the Lady Doctor at Rs. 100 per mensem	$100 \times 12 = ,,$	1,200
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P. T. A. for the Lady Health Visitors at Rs. 50/- each per mensem.	$50 \times 4 \times 12 = ,,$	2,400
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P. T. A. for Midwives at Rs. 30/- per mensem	$30 \times 8 \times 12 = ,,$	2,880
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P. T. A. for Sanitary Inspectors at Rs. 25/- per mensem	$25 \times 4 \times 12 = ,,$	1,200
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Medicines, propaganda and contingencies	$,,$	3,500
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Total .. Rs.	<u>34,568</u>
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Non-recurring Expenditure.

Nil.

Recurring Expenditure.

Rs. 34,568

3. Brief description of Scheme

- (1) *Rapid Filtration plant for existing water supply from River Indus for Hyderabad.*

The present water supply from river Indus is muddy. It is essential for the health of the town to obtain clean filtered water for both the civil and military population. The scheme provides for a Rapid Filtration Plant. The scheme was sanctioned in 1931 but due to slackness of the Municipality it could not be put into operation. This will however need revision.

- (2) *Improvements to, and extensions of, the existing drainage and water supply for Hyderabad.*

The present drainage system and disposal works are neither satisfactory nor capable of carrying even the present full discharge. The Scheme for improving the entire drainage system is therefore essential. A partial scheme was sanctioned in 1931 which will need to be overhauled completely in view of the expansion of the town in all directions. It is essential to improve the drainage system, as soon as war is over, as otherwise the sanitation of the town which is already in a bad way will deteriorate further resulting into possible outbreak of epidemic.

It is also necessary to improve the distribution system, storage reservoirs, pumping plant so as to provide sufficient water for the present and future requirements of the town which is expanding rapidly.

(3) *Improvements to, and extensions of, the existing drainage and water supply for Sukkur.*—

The town of Sukkur has been expanding in all directions, as it is an important trade centre, and people from small villages have also migrated into it for safety. The existing water supply and drainage arrangements therefore, need to be improved as early as possible to meet the present requirements which have increased considerably due to recent development of the vacant areas round about the town and also to provide for the future. The Municipality has prepared the schemes for improvements to water supply and drainage and these will be executed after the war is over.

(4) *Drainage and improvements to existing water supply for Jacobabad.*

The existing water supply arrangement is quite inadequate to meet even the present requirements of the town which has expanded considerably, due to influx of the people in Jacobabad from small villages, since the water supply arrangement was made first in the year 1932. It is essential therefore, to supplement the present water supply which is pumped from wells at Nurwah bank, by sinking a few wells in the town proper and providing more standposts for the use of people.

The present system of collecting sullage water in cesspits and removing it by donkey carts is very insanitary. Besides, there is no arrangement for the disposal of storm water except with buckets by sweepers. The drainage scheme for the entire town was sanctioned in 1937 and is awaiting execution which will be carried out as soon as the war is over.

(5) *Improvements to existing drainage for Larkana.*—

The existing disposal works are quite inadequate, and open collecting and outfall drains are small and at places have a flatter gradient and therefore, overflow into the roads rendering them very insanitary.

Sometimes they act as stagnant elongated pools. It is essential therefore, to improve the drainage system, as early as possible. The Scheme for improvements to the existing drainage and providing new drains in the localities which have developed recently, was sanctioned in 1937, and it is essential to carry out the work as soon as war is over. The Municipality was anxious to commence it during war-time if materials and plant could be provided but the execution had to wait as the requisite plant and pipes could not be had even at exorbitant prices.

(6) *Improvements to existing drainage for Kanbar.*—

At present the sullage water is collected into low lying areas round the town, where it is allowed to stagnate which is very insanitary. The scheme for collecting main and outfall drains and disposal works was sanctioned in 1937. The Municipality was anxious to carry it out even during war-time if pipes and plant could be had. It will be carried out as soon as war is over.

(7) *Drainage and water supply for Kotri.*—

The present arrangement of getting water from river Indus either by head load or bullocks is quite unsatisfactory. The preliminary scheme has therefore been prepared for pumping water from the river Indus into settling tanks and then lifting up to elevated reservoirs from which it is to be distributed through C. I. pipe lines into the town.

The existing cesspool arrangement for collecting sullage water and its removal by donkey carts is quite insanitary and there is no arrangement for disposal of storm water. The drainage scheme for open surface drains, disposal works, etc. has been prepared.

Both the schemes are necessary for the health of the town and require to be carried out as soon as war is over.

(8) *Drainage for Shahdadpur.*—

Same as for Kotri Drainage [No. (7).]

(9) *Drainage and water supply for Mirpurkhas.*—

The existing arrangement for obtaining water supply from wells is not satisfactory. The sullage and storm water is allowed to collect in low lying areas round the town, where it stagnates and is a source of danger to the health of the town.

The schemes for water supply and drainage of the whole town on modern lines are therefore essentially required to be carried out as early as possible, as the town is developing rapidly.

The scheme for pumping water from wells to be sunk at the bank of the minor or canal running in the vicinity of the town into the elevated reservoir and then distributing it through C. I. pipe lines, is under preparation. The project for disposal of the sullage and storm water is also being prepared.

Both these schemes will be executed as soon as war is over.

(10) *Drainage for Nawabshah.*—

The sullage water is being collected in cesspools and removed by donkey carts and thrown out in low lying areas in the town proper or on roads of the town which are mostly kacha. There is no arrangement for drainage of the storm water. This town which has developed recently needs to be provided with proper modern drainage arrangement so that the health of the town does not suffer. The town has been expanding rapidly as it is a District Headquarter and has all facilities for trade, it being the centre of cotton production. The drainage scheme on modern lines is in hand and will be carried out after the war is over.

(11) *Drainage for Tando Allahyar.*—

At present the sullage and storm water is being allowed to stagnate in low lying areas in the town proper, which is very injurious to the health of the town. The Scheme for collecting main and outfall drains and disposal works is in hand and will need to be carried out as soon as the conditions permit.

(12) *Improvements to drainage and water supply for Rohri.*—

The arrangements for disposal of sullage and storm water are not satisfactory. The sullage water is partly collected into cesspits from where it is removed by donkey carts into low lying areas and it is partly discharged through open surface drains into the low lying areas or central cesspits from where either it gravitates through underground drains into the river just below the intake works for water supply or it is pumped into the river. The storm water is allowed to stagnate into the low lying area, till it evaporates. The scheme for the collecting main and outfall drains and disposal works is in hand and will be carried out as soon as the circumstances permit.

(13) *Improvements to drainage for Shikarpur.*—

The sanitary condition of this town is very unsatisfactory. The underground drainage collecting and outfall drains and disposal works are not being looked after properly by the Municipality. The storm water drains are also not functioning properly. Furthermore, due to abnormal rise of sub-soil water level, arrangements for disposal of sullage, storm and sub-soil water need to be improved as early as possible, as otherwise the health of the town which is already bad, will deteriorate still further. The Municipality has been asked to prepare scheme for improvement of drainage and the work will be done after the war is over.

(14 and 15) *Improvements to drainage for Dadu, Ratodero, Kandiaro and Tatta.*

The drainage arrangements for these towns also require to be improved as the present system of collecting sullage water either in cesspits or in low lying areas is very insanitary. The drainage scheme for these places will be prepared shortly, to be carried out after the war is over.

The schemes are necessary for improving the sanitary conditions of urban areas having a population of more than 10,000 in each town.

All the schemes can be finished within five years.

A new Sind Sanitary Sub-Division consisting of one Assistant Consulting Public Health Engineer and two Overseers is being opened shortly to prepare these schemes; proposals for this have been approved by the Board of Public Health and forwarded to Government for necessary action.—

4. Areas selected for application, if applicable ...	(1) Rs.	5,00,000
5. Time expected to be taken for execution ..	(2) Rs.	25,00,000
6. Brief details of staff required and how staff is proposed to be obtained.	(3) Rs.	10,00,000
	(4) Rs.	9,00,000
	(5) Rs.	6,00,000
	(6) Rs.	1,50,000
	(7) Rs.	3,00,000
	(8) Rs.	7,50,000
	(9) Rs.	15,00,000
	(10) Rs.	7,50,000
	(11) Rs.	1,50,000
	(12) Rs.	1,50,000
	(13) Rs.	3,00,000
	(14) Rs.	3,00,000
	(15) Rs.	7,50,000
Total Rs. ...		1,06,00,000

(ii) Recurring Will be given after detailed estimates are prepared.

8. Extent to which the Scheme will be productive.— Nil.

9. Extent to which the Scheme will cater for returned service personnel. Being a special type of work, required personnel may not be available but one or two overseers and a clerk can be taken up from *ex* service men.

10. General description of plant, equipment or stores—

- | | |
|--------------------------------|-------|
| (i) to be imported from abroad | } } } |
| (ii) to be obtained in India. | |

It cannot be stated at this stage. Pumping plant and C. I. specials will only be needed from abroad. C. I. pipes and hume pipes and S. G. W. pipes required can be had in India.

11. Labour force required in the case of the larger schemes.

Skilled.—75,930 in 5 years. *i.e.*, 50 per day on the basis of 300 working days in a year.

Unskilled.—7,12,750 in 5 years *i.e.*, 475 per day on the basis of 300 working days in a year.

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.

Central Government's assistance will be required for obtaining pumping plant and C. I. specials only.

13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.

Nil.

14. Any other remarks or information.

The Schemes are to be financed by the local bodies concerned either from their general funds or loan funds to be raised for the purpose, with the permission of Government, and to be repaid within 20 years or so.

N.B. This does not include the scheme for the drainage of Artillery Maidan estimated to cost about one lac of rupees, which has to be financed by Government from the Provincial Revenues.

Key Statement of Schemes under "XVI—Public Health and Medical Services."

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Serial Number of the Scheme.	Description of the Scheme.	Approximate cost of five year plan in thousands.		Category of scheme (<i>viz</i> : Special Priority, All Province, etc.)	Special remarks, if any.
		Capital.	Recurring.		
1	2	3	4	5	6
	XVI.—MEDICAL AND PUBLIC HEALTH SERVICES.	Rs.	Rs.		
	<i>A.—Medical Services.</i>				
†77	Establishment of a Medical College.	17.11	8.59	Special priority.	†The Medical College has since been established in June 1945
78	Re-organisation of the office of the Inspector-General of Civil Hospitals.	3	2.64		
79	Establishment of a Medical Engineering Department.	Nil.	2.90	All province	
80	Establishment of a Central Preliminary School for Nurses.	1.50	1.97	Special priority.	
*81	Extension of existing hospital buildings.	13.68	Nil.	All province	* The relative priority of the various items included in the scheme will be determined later.
82	New Buildings Projects	23.50	Nil.		
83	Training of Midwives	2.00	2.20	Special priority.	
84	Creation of a cadre of X-Ray and Laboratory Technicians.	Nil.	1.22		
85	Strengthening of the Hospital staff.	Nil.	20.10	All province.	
86	Institutions of Honorary Medical Officers.	Nil.	1.44		
87	Establishment of additional dispensaries in rural areas and taking over of the Local Board Dispensaries	26.65	38.77		
88	Conversion of dispensaries into Rural Hospitals.	Nil.	1.76		

Serial Number of the Scheme.	Description of the Scheme.	Approximate cost of five year plan in thousands.		Category of scheme (<i>viz</i> : Special Priority, All Province, etc.)	Special remarks, if any.
		Capital.	Recurring.		
1	2	3	4	5	6
		Rs.	Rs.		
89	Reconstruction of Hospital Buildings.	15.09	Nil.	All province	*The details have been worked out in consultation with the Director General, Indian Medical Service, Delhi. The working capital required for the purchase of the stores has not been included in the estimates.
90	Improvement of existing Hospital Buildings.	2.30	Nil.		
91	Establishment of Pathological Laboratories.	40	1.02		
92	Establishment of Dental, Eye and Venereal Clinics.	30	92		
93	Establishment of a Central Laboratory.	10	2.40		
94	Supply of additional equipment to the Medical Institutions.	8.95	Nil.	Special priority.	
95	Introduction of full dieting in hospitals.	Nil.	5.40		
96	Training in Pharmacy and Pharmaceutics.	Nil.	20	All province.	
97	Establishment of a College of Dentistry.	3.50	73		
98	Provision of Telephones in the Medical Institutions.	Nil.	10		
*99	Establishment of a Provincial Medical Stores Depot.	50	98	Special priority.	†This institute will be attached to the Medical College (Scheme No. 77).
100	Provision of Post-graduate study in the Foreign Countries.	Nil.	2.19		
101	Establishment of an Ambulance Service.	80	61		
102	Establishment of a Children's Hospital.	1.50	2.40		
103	Establishment of a Tuberculosis Sanatorium.	2.00	3.23		
104	Establishment of Convalescent Homes.	2.75	1.80		
105	Establishment of Infirmarys.	5.00	3.00		
†106	Establishment of a Radium Institute.	1.50	32		
107	Transfer of Sir C.J. Mental Hospital, Hyderabad to Karachi.	15.00	1.50		
Total of A.—Medical Services.		1,44.16	1,08.39		
		2,52.55			

Serial Number of the Scheme.	Description of the Scheme.	Approximate cost of five year plan in thousands.		Category of scheme (<i>viz</i> : Special Priority, All Province, etc.)	Special remarks, if any.
		Capital.	Recurring.		
1	2	3	4	5	6
		Rs.	Rs.		
108	<i>B.—Public Health Services.</i> District Health Staff ..	2,25	16,61	Special priority.	
109	Maternity and Child-welfare Centres.	10,39	19,51		
110	Epidemic Medical Officers' Unit.	1,28	3,15	All province.	
111	Field Investigation Unit	51	64		
112	Nutrition Survey Unit	32	64		
113	Health Unit. ..	50	69	Particular area	
	Total of B.—Public Health Services.	15,25	41,24		
		56	49		
	<i>C.—Public Health Schemes of Local Bodies.</i> Improvement to drainage and water supply schemes.	1,06,000	Not worked out.	Particular area	
	Total of C.—Public Health Schemes of Local Bodies.	1,60,00	Not worked out.		
		1,60,00			
	GRAND TOTAL FOR XVI—MEDICAL AND PUBLIC HEALTH SERVICES.	2,65,41	1,49,63		
		4,25,04			

*Recurring cost will be worked out after detailed estimates are prepared. Schemes will be financed by the local bodies concerned either from their general funds or from the loans to be raised for the purpose. This scheme does not include the scheme of the Drainage of Artillery Maidan estimated to cost about one lac of rupees which will be financed by Government from the Provincial Revenues.

NARRATIVE OF THE STATEMENT OF OBJECTIVES OF THE POST-WAR SCHEMES UNDER XVI—"PUBLIC HEALTH AND MEDICAL SERVICES".

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A—MEDICAL SERVICES.

The medical organisation of the Province as distinct from its public health organisation is essentially a hospital organisation designed to render medical relief to the general population. The organisation is based on the district as the primary unit. There is at every district headquarters, a hospital styled, the "Civil Hospital" which is owned, staffed, financed and controlled by Government. The Civil Hospital is the centre of the official system of medical relief and is the superior hospital for the District co-ordinating the medical relief activities in the whole district. Subsidiary to it are the Government aided dispensaries which are scattered throughout the district, and linked to it for the supply of additional and specialist medical aid are the smaller hospitals and dispensaries of the local bodies (District Local Boards and Municipalities) and of semi-private bodies.

2. First of all, the District Headquarters Hospitals are to be improved so that people in the District will get all ordinary treatment near their homes and take advantage of the relief provided, in larger numbers. The existing hospital accommodation will be increased; in some cases new hospitals will be built. The nursing staff of the hospitals will be augmented, and medical and other staff sufficient to serve the increased needs of the patients will be provided. This also includes the supply of additional equipment (including telephones) as well as the introduction of a full dieting system in the Hospitals.

3. The assistance of specialist architects will be secured for advice on the design of hospital buildings which will have to be constructed on modern scientific lines. The latest advances in the uses of materials and methods of construction are to be studied in order to ensure efficiency combined with economy and speed in the execution of the programme. For this purpose, it is proposed to create an Engineering section in the Medical Department. A pathological laboratory is also proposed to be provided in each of the District Hospitals.

4. No one can feel satisfied, with the diagnosis and treatment now offered at the out-patients' Departments of these hospitals. If these places are to be changed from "the bottle of medicine" standard to proper consultative clinics, a great expansion of aids to diagnosis is required. For these aids technicians will be required. It is proposed to train science graduates for this purpose and to form laboratory and X-ray Technicians. It is proposed to provide at each District Civil Hospital one pathological laboratory for undertaking pathological examination of clinical material as well as clinics for the treatment of dental, visual and venereal diseases. The hospitals will thus have technicians on their staff.

5. To link up the hospital with the interior of the District an Ambulance Service scheme is proposed and will be carried out during the 1st five years of the Post-War Reconstruction programme. Under this scheme, one ambulance car will be kept at the disposal of each District Headquarter Hospital to bring serious cases from the interior of the district to the Civil Hospital.

6. The existing dispensaries in the rural areas mostly cater for outdoor patients and are provided with only a few beds for emergency cases. Upon such an institution on the staff of which, besides the doctor, there is only a compounder with one or two inferior servants, a very large number of rural population have to depend at present for medical relief by modern methods. Such a dispensary is an unsatisfactory terminal link to the chain of medical relief. The correct role of the rural dispensary should be to serve as a Rural Hospital, serving the area and collaborating with the practitioners in the locality. For this purpose, it should have better equipment, adequate staff including nurses and after-care arrangements. A rural dispensary thus re-orientated as a Rural Hospital would take such cases from general practitioners as cannot be treated at home and pass on to larger hospitals those who require special treatment. It is proposed to convert sixteen rural dispensaries into such hospitals during the first quinquennium.

7. In order to expand the present facilities for rural medical relief it is proposed to open 40 more rural dispensaries in addition to the 107 existing at present—8 in each year. These dispensaries will be mainly for out-patients and will not have more than 8 beds each. It is also proposed to take over under the management of Government the non-aided dispensaries of the District Local Boards and Municipalities.

8. It has been accepted on all sides that there should be only one registerable qualification for students of scientific medicine which would be of the standard of the University Degree, *viz.*, M.B., B.S. This object has been achieved by converting the existing Medical School, Hyderabad, into a Medical College named as the Dow Medical College. It has started functioning at Hyderabad from the current academic year and will be shifted to Karachi by the end of December 1945. A course of study in pharmacy will also be organized in the College. Moreover there are no facilities for radium treatment in the Province. It is proposed to make good this deficiency by the establishment of a Radium Institute and to attach it to this College.

9. Apart from raising the standard of medical education, the scheme will also be so designed as to produce more doctors required for implementing the other Post-War Development schemes formulated for the improvement of medical relief in this Province. It is also proposed to depute selected Medical Officers already in Government service for higher studies in foreign countries at the expense of Government.

10. There is at present a great shortage of nurses in the Province. With a view to increasing the out-put of nurses, it is proposed to establish a Central Preliminary Training School where candidates could be given training in Nursing. Such Training Schools for nurses exist throughout the World, and before a student nurse is allowed to join training at a hospital, she has to undergo a short preliminary training at such School. Along with the training of nurses, it is proposed to provide elaborate facilities for the training of midwives. The existing subsidised centres at Karachi, Hyderabad and Sukkur will be expanded so as to increase the out-put of midwives, and one more subsidised centre will be set up at Karachi.

11. It is also considered essential to provide special institutions at the Provincial Headquarters. The Plan therefore contemplates the establish-

ment of the following institutions at Karachi which will serve the needs of the whole Province :—

- (1) Central Laboratory (with which certain sections of the present Chemico Bacteriological Laboratory will be amalgamated).
- (2) College for dentistry.
- (3) Hospital for children.
- (4) T. B. Sanatorium (its location has not yet been decided).
- (5) Convalescent Home.
- (6) Infirmaries. (In addition to Karachi, the town of Hyderabad and Sukkur are also proposed to be provided with these institutions).
- (7) Mental Hospital (one already exists at Hyderabad and it is proposed to shift it to Karachi where it will be accommodated in a suitable building especially constructed for the purpose and then maintained on up-to-date methods).

12. With the increase in the number of medical institutions and the expansion of facilities for medical relief in the existing ones, it will be necessary to establish a Provincial Stores Depot which will feed all such institutions including those of the local and private bodies.

13. The various post-war schemes discussed in this narrative will involve re-organisation of the head office of the Medical Department for which due provision has been made in the Plan.

B—PUBLIC HEALTH SERVICES.

The Public Health Department has a very limited staff to attend to health problems and deal effectively with epidemic diseases in rural areas. The Department has to depend largely on voluntary associations and local bodies for the conduct of health services such as maternity and child-welfare, epidemic control, village water-supply and sanitation.

2. In the Post-war period it is intended to have health services functioning in each district under a District Health Officer who will have the necessary staff to attend to village sanitation and water-supply and the organisation of anti-epidemic measures and generally to educate the public health matters. Each District Unit will comprise one Health Officer, three Health Inspectors, and the other necessary sanitary and clerical staff.

3. Among the major epidemic diseases of the Province malaria figures prominently. It undermines the health of the population and it will engage the special attention of the department. The District Health Staff and the Epidemic Malaria Officers will be responsible for carrying out anti-malaria operations.

4. At present scarcely any facilities exist for maternity and child welfare in the villages. It is therefore, proposed to establish a central organization for the control and direction of maternity services, and a maternity home and child-welfare centre in each taluka. An Assistant Directress of Public Health will supervise the work of all centres and remain

in charge of the Central organization. This staff will check ante-natal registration, give advice to expectant and nursing mothers, supervise the work of the midwife in respect of natal and post-natal work and arrange for the examination or treatment of expectant mothers and infants.

5. One Health Unit is proposed to be established as an experimental measure, in one district, in the first instance. It will concentrate on public health work among the rural population. Among the important problems with which this Unit will deal are maternity and child-welfare work, improvement of rural sanitation, control of infectious diseases, education of the people in public health, and the supervision and registration of vital statistics. In addition it will serve as a training ground for all grades of public health personnel required in the Province.

6. Past experience has shown that the absence of any standing epidemic duty staff constitutes a very serious handicap in combating epidemics promptly and effectively when they break out. It is therefore proposed to have a permanent mobile epidemic staff which will readily be available for being detailed on duty at short notice, whenever necessary. When not so engaged it will be utilized in connection with anti-malaria work.

7. As a preventive measure for dealing with the epidemic diseases, the establishment of a Field Investigation Unit is under contemplation. This Unit will be required to carry out Scientific investigation in respect of the epidemics common to this Province, and also to collect the relevant statistics, study them and then issue the necessary forecasts. The Unit will also carry out investigations in the areas actually affected by epidemics.

8. The Plan also envisages the establishment of a Nutrition Survey Unit whose main function would be to study the composition of foods of local importance, to carry out diet surveys, to investigate the incidence of malnutrition and deficiency diseases, and to attend to all matters of health associated with nutrition.

C—PUBLIC HEALTH SCHEMES OF THE LOCAL BODIES.

The need for the provision of a safe supply of water for all is obvious, especially in a Province where water borne disease takes a heavy toll of life. It is considered that all municipal towns should have an adequate and safe piped supply. It is also proposed to provide a proper drainage system for each of the important municipal towns. Accordingly it is proposed to carry out the various water-supply and drainage schemes enumerated in Scheme No. 114 printed at pages 392-399 of Part II of this publication. The Schemes will be financed by local bodies concerned either from their general funds or from the loans to be raised for the purpose. The execution of these schemes will necessitate the strengthening of the Department of Consulting Public Health Engineer to Government, and this aspect of the question is being considered separately.

2. The problem of water-supply in rural areas is dealt with in Scheme No. 60 under "Rural Uplift and Village Amenities", printed at pages 250-251 of Part II of this publication.

1.	Serial Number of Scheme	..	..	IX5.
2.	Name of Scheme	..	..	Constitution of a Provincial Town-Planning Advisory Committee.
3.	Brief description of Scheme	..	..	The scheme involves the constitution of a Committee to investigate into and prepare preliminary report on, the present and future requirements of the various towns, such as roads, sewage, water-supply industrial sites, etc., to facilitate preparation of a comprehensive master plan for each town. The Composition of the Committee will be—
				(1) Director of Public Health.
				(2) Director of Industries.
				(3) Consulting Public Health Engineer.
				(4) Representative of the Public Works Department.
				(5) Consulting Surveyor to Government.
4.	Areas selected for application, if applicable.	..	..	Whole Province.
5.	Time expected to be taken for execution	..	..	The Committee would function for about 2 years for the present, but its term may have to be extended.
6.	Brief details of staff required and how staff is proposed to be obtained.	..	..	No extra staff required.
7.	Rough estimate of cost at existing rates.	..	..
	(i) Capital	..	..	Nil.
	(ii) Recurring	..	..	About Rs. 10,000 in all.
8.	Extent to which the Scheme will be productive—	..	..	Nil.

9. Extent to which the Scheme would cater for returned service personnel.
10. General description of plant, equipment or stores—
 - (i) to be imported from abroad,
 - (ii) to be obtained in India.
11. Labour required in the case of the larger Schemes. Nil.
12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.
13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.
14. Any other remarks or information.

1.	Serial No. of Scheme	..	..	116:
2.	Name of Scheme	..	..	Reorganization of the Town Planning and Valuation Department.
3.	Brief description of Scheme	..	..	In order to promote Town Planning and Housing activities in the Province, it is proposed to strengthen Headquarter Office to meet with the growing needs, consequent on increased activities as a result of intensified works to be undertaken during the post-war period. The activities of the Department will be mainly the following :— I. Preparation of City Plans for every town in the Province. II. To undertake civic surveys to study the problems of congestion and overcrowding. III. To accelerate the pace of Town Planning activities for extension and development of towns. IV. To give expert advice to District Municipalities, Sanitary Committees, and Notified Area Committees, in the making of suitable layouts and suggesting sites for town extension after study of the local problems. V. To raise the standard of living of the people by providing suitable houses conforming to certain standards regarding site, ventilation, lighting, waste disposal, water supply, etc. VI. To enable the Revenue authorities in districts to consult the Department for Non-agricultural assessment in towns and valuation work. VII. To ensure control of land proposed to be converted from agricultural into non-agricultural. VIII. To control and manage City Survey Section of the office of the Superintendent of Survey and Land Records.
4.	Areas selected for application, if applicable ..	..	..	Whole Province.

5. Time expected to be taken for execution Soon after the Scheme is sanctioned.
6. Brief details of staff required and how staff is proposed to be obtained. (a) Upper staff } as indicated in the statement printed at page 411
(b) Lower staff } *post.*

Staff will be obtained :—

- (i) partly by promotion from within the Department, and
(ii) partly by direct recruitment.

7. Rough estimate of cost at existing rates—
- | | |
|--------------------------|------------------------------------|
| (i) Capital | Rs. 4,000 |
| (ii) Recurring | Rs. 1,75,000 for the whole period. |
8. Extent to which the Scheme will be productive. The Scheme is indirectly productive as Government will derive extra income from Non-Agricultural conversions. The figures, however, cannot be estimated.
9. Extent to which the Scheme will cater for Nil.
returned service personnel.
10. General description of plant, equipment or stores.—
- | | |
|---|----------------------------------|
| (i) to be imported from abroad. | Nil. |
| (ii) to be obtained in India. | Furniture, books and stationery. |
11. Labour force required in the case of the }
larger schemes. }
12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel. } Nil.
13. Brief indication where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods. The programme outlined is of a permanent nature and will require the services of the proposed staff for a very long time to come.
14. Any other remarks or information. Nil.

*Statement showing the staff required in connection with Scheme No. 116
(Item No. 6 of the Scheme).*

—————:0:—————

(1) *Upper Staff.*

One Deputy Consulting Surveyor	..	Rs. 400—20—600.
One Assistant Consulting Surveyor	..	Rs. 250—15—400—20—500.

(2) *Lower Staff.*

Three Surveyors	..	..	Rs. 125—10—195—25/2—270.
Two Draftsmen	..	..	.. Rs. 85—5—150.
Two Tracers	..	..	.. Rs. 30—5/2—60—3—75.
One Superintendent	..	..	.. Rs. 180—10—260.
One Accounts clerk	..	..	.. Rs. 80—5/2—95.
> One Senior clerk	..	..	.. Rs. 80—5/2—95.
Five Clerks	..	..	.. Rs. 25—5/2—55.
Six Peons and khalasis.	..	..	.. Rs. 16—1/5—20.

1.	Serial No. of Scheme	..	117.	Extension of District Towns in order to relieve congestion.
2.	Name of Scheme	..	..	There is an appalling congestion in most of the towns. Though there is generally plenty of land in and around the city area suitable for building purposes, such lands have not been utilised due to lack of initiative and other cognate reasons with the result that congestion in the built up areas worsens from year to year with the increase in population. It is proposed to develop about 2,500 acres in the first instance to accommodate about one lac of persons in the different towns. The co-operation of the Public Works Department and the local authorities will be necessary for the execution of the schemes.
3.	Brief description of Scheme	..	..	Towns of Hyderabad, Sukkur, Shikarpur, Jacobabad, Larkana, Mirpurkhas, Nawabshah and Dadu.
4.	Areas selected for application, if applicable..	..	..	Five years.
5.	Time expected to be taken for execution	..	..	Agency for work to be decided by Government.
6.	Brief details of staff required and how staff is proposed to be obtained.	..	..
7.	Rough estimate of cost at existing rates—	..	..
	(i) Capital—	..	..	Rs. 1,00,00,000 for the whole period of five years.
	(ii) Recurring	..	..	Nil.
8.	Extent to which the Scheme will be productive.	..	..	50 per cent. of the investment is expected to be recouped from the sale of developed plots.
9.	Extent to which the Scheme will cater for returned service personnel.	..	..	Nil.

10. General description of plant, equipment or stores—
 (i) to be imported from abroad Nil.
 (ii) to be obtained in India. All materials.
11. Labour force required in the case of the Labour force is available locally.
 larger schemes.
12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery and technical personnel. Yes.
13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods. The scheme will be extended to Taluka towns and other towns of importance during the succeeding five year periods.
14. Any other remarks or information. Apart from the relief of congestion, the Scheme will facilitate the improvement of existing built up areas on a more economic basis owing to a fall in the land values in the heart of the City, due to the increased supply of land.

1.	Serial No. of Scheme	...	118.	Subsidized housing schemes for the poor and working classes.
2.	Name of Scheme	...	...	The need for necessary arrangement to enable the poor and working class to live under hygienic conditions and healthy surroundings, hardly needs any emphasis. The stumbling block in achieving this ideal is finance. The feature of this Scheme is that the lessee can rent such houses at about 25 per cent. below the economic rent. The loss consequent upon such concession will be borne by the Provincial Government.
3.	Brief description of Scheme.	...	...	In the first instance the scheme will be worked out at Karachi, where in some quarters the living conditions are notoriously unsatisfactory. The Karachi Municipal Corporation or the proposed Improvement Trust will construct the houses and maintain the same in proper state.
4.	Areas selected for application, if applicable...	...	5 years.	No extra staff is necessary.
5.	Time expected to be taken for execution	...	...	5,000 houses accommodating 25,000 persons will be constructed during the course of the first five year plan. The cost of each house has been estimated at Rs. 2,500. The subsidy will be accordingly 1/4th of the above amount. The net cost to the Government will be— (Rs. 2,500 × 5,000 = 1,25,00,000) ÷ 4 = Rs. 31,25,000.
6.	Brief details of staff required and how staff is proposed to be obtained.	...	...	Nil.
7.	Rough estimate of cost at existing rates	...	...	Nil.
	(i) Capital	..	..	...
	(ii) Recurring	..	..	...
8.	Extent to which the Scheme will be productive.	...	...	...
9.	Extent to which the Scheme will cater for returned service personnel.	...	...	They may be given preference while letting out houses.

10. General description of plant, equipment or stores.—

- | | | |
|--|----|------------------------------------|
| (i) to be imported from abroad | .. | Concrete mixers and trucks. |
| (ii) to be obtained in India. | .. | All remaining materials. |
| 11. Labour force required in the case of the larger schemes. | | Labour force is available locally. |

12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.

Yes.

13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.

The Scheme has very great potentiality of being developed and extended to other towns in the light of the experience gained.

14. Any other remarks or information

Apart from helping the poor to live in healthy and decent surroundings, the problem of overcrowding will also be solved, to a certain extent, because the population will spread out to newly developed localities.

1.	Serial No. of Scheme	..	119.
2.	Name of Scheme	..	Constitution of an Improvement Trust for Karachi.
3.	Brief description of Scheme	..	<p>Karachi is bound to occupy an important place in the international field during the post-war period due to its strategic, climatic and geographical position. The following are some of the problems which need solution and the creation of an Improvement Trust for the execution of such stupendous works is a necessity :</p> <p>I. Improvement of Lyari Quarter including provision of underground drainage and water supply facilities.</p> <p>II. Development of Trans Lyari Quarter and other vacant lands in the Municipal Area.</p> <p>III. Removal of Military Cantonment from the city and its utilization of the land so released for civil purposes.</p> <p>IV. Extension of City and its eastern outskirts.</p> <p>V. Zoning of areas for various purposes.</p> <p>VI. Poor and working class housing.</p> <p>VII. Suburban development on modern lines.</p> <p>VIII. Provision of adequate number of parks and recreation grounds.</p> <p>IX. Provision of swimming pools.</p> <p>X. Construction of bridges across Lyari river.</p> <p>XI. Removal of slums.</p> <p>XII. Arrangements for adequate transport facilities.</p> <p>XIII. Middle class housing.</p> <p>XIV. Provision of underground drainage facilities.</p> <p>XV. Improvement of sea beach at Clifton, Hawks Bay, Sandspit, etc.</p>

4. Areas selected for application, if applicable .. Karachi City and its suburbs.
5. Time expected to be taken for application .. 15 years.
6. Brief details of staff required and how staff is proposed to be obtained. This will be reported at a later date.
7. Rough estimate of cost at existing rates .. } The details will be worked out at a later date.
(i) Capital.
(ii) Recurring.
8. Extent to which the Scheme will be productive. } Part of the expenditure will be recouped by the sale of developed lands.
The increase will also be reflected in the returns of property and other taxes collected by the Municipal Corporation.
9. Extent to which the Scheme will cater for returned service personnel. Nil.
10. General description of plant equipment or stores—
(i) to be imported from abroad .. Drainage Machinery (ejectors, pumps) sluice valves, etc.
(ii) to be obtained in India .. All other materials.
Labour force required in the case of the larger schemes. Labour is available locally.
11. Labour force required in the case of the larger schemes.
12. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods :
The programme outlined is so comprehensive as to necessitate 15 years for its completion. Modification if any, in the programme will be attempted only after gaining first hand experience during the first five-year plan.
13. Whether the assistance of Central Government is likely to be required for obtaining materials, machinery or technical personnel. Nil.
14. Any other remarks or information. .. The constitution of a Trust presupposes the passing of an enactment by the legislature. The problem requires deep study in all its implications including finance so that the question of the constitution of the Trust and passing of necessary enactments should be taken up at an early date.

KEY STATEMENT OF SCHEMES FOR 'XVII—HOUSING AND TOWN-PLANNING.

KEY STATEMENT OF SCHEMES FOR AVIATION					
Serial Number of the scheme.	Description of the scheme.	Approximate cost of five year plan in thousands		Category of scheme (viz : Special priority, All province etc.)	Special remarks, if any.
		Capital.	Recurring.		
1	2	3	4	5	6
		Rs.	Rs.		
115	Constitution of a Provincial Town Planning Advisory Committee.	Nil.	10	Special priority.	
116	Re-organisation of the Town Planning and Valuation Department.	4	1,75		
117	Extension of District Towns in order to relieve congestion ..	1,00,00	Nil	All province.	
118	Subsidised housing scheme for the poor and working classes ..	31,25	Nil	Particular area..	
119	Constitution of an Improvement Trust for Karachi ..	Details of the cost have not been worked out.			
	Total ..	1,31,29	1,85		
		1,33,14			

XVIII—LABOUR AND LABOUR WELFARE.

—: 0 :—

1.	Serial No. of Scheme.	..	..	120.	Opening of Labour Welfare Centres.	
2.	Name of Scheme	..	..	..	At present there are only two Labour Welfare Centres—both in the City of Karachi. It is now proposed to increase this number to six in the city and also to open four more such centres—two at Hyderabad, one at Sukkur and one at Rohri.	
3.	Brief description of Scheme	..	..	..	Karachi, Hyderabad, Sukkur and Rohri.	
4.	Arcas selected for application, if applicable.			..	Five years.	
5.	Time expected to be taken for execution	..	..	..	Cannot be stated at present.	
6.	Brief details of staff required and how staff is proposed to be obtained.			..		
7.	Rough estimate of cost at existing rates.—			..		
	(i) Capital	..	..	..	Rs. 7,500	
	(ii) Recurring	..	..	..	Rs. 9,000 per annum.	
8.	Extent to which the Scheme will be productive					
9.	Extent to which the Scheme will cater for returned service personnel.					
10.	General description of plant, equipment or stores—					
	(i) to be imported from abroad.					
	(ii) to be obtained in India.					
11.	Labour force required in the case of the larger schemes.					Nil.
12.	Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.					
13.	Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.					
14.	Any other remarks or information.					

1.	Serial No. of Scheme	..	..	121.	Appointment of a full-time Commissioner of Labour.
2.	Name of Scheme.	..	..		In order that the matters pertaining to labour may receive adequate attention, it is proposed to have a full-time officer as Commissioner of Labour.
3.	Brief description of Scheme	..	..
4.	Areas selected for application, if applicable			Nil.	
5.	Time expected to be taken for execution.	..	..		First year of the plan.
6.	Brief details of staff required and how staff is proposed to be obtained.				Full-time Commissioner of Labour is to be appointed in accordance with the relevant Recruitment Rules applicable to the cadre in which the post is created.
7.	Rough estimate of cost at existing rates.—				
	(i) Capital	..	..	Nil.	
	(ii) Recurring	..	..	Rs. 8,841	per annum.
8.	Extent to which the Scheme will be productive.				
9.	Extent to which the Scheme will cater for returned service personnel.				
10.	General description of plant, equipment or stores—				
	(i) to be imported from abroad.				
	(ii) to be obtained in India.				
11.	Labour force required in the case of the larger schemes.			Nil.	
12.	Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.				
13.	Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.				
14.	Any other remarks or information				It is proposed that the full-time Commissioner of Labour should also be in charge of the Factories Department.

1. Serial No. of Scheme .. 122.
2. Name of Scheme .. Opening of a separate Labour Department in the Secretariat.
3. Brief description of Scheme .. As the labour work is on the increase, it is proposed to have a full-fledged section in the Secretariat to deal with it
4. Areas selected for application, if applicable. Nil.
5. Time expected to be taken for execution .. First year of the plan.
6. Brief details of staff required and how staff is proposed to be obtained. One Superintendent, three Assistants, three Clerks, one Typist and two peons (the superior staff to be recruited through the Public Service Commission and the inferior staff to be selected locally).
7. Rough estimate of cost of existing rates.—
- | | |
|----------------------|-----------------------|
| (i) Capital, | Nil. |
| (ii) Recurring | Rs. 17,000 per annum. |
8. Extent to which the Scheme will be productive.
9. Extent to which the Scheme will cater for returned service personnel.
10. General description of plant, equipment or stores.—
- | | | |
|----------------------------------|---|------|
| (i) to be imported from abroad. | } | Nil. |
| (ii) to be obtained in India. .. | | |
11. Labour force required in the case of the larger schemes.
12. Whether the assistance of the Central Government is likely to be required for obtaining materials, machinery or technical personnel.
13. Brief indication, where applicable, of further development contemplated on the lines of the Scheme in succeeding five year periods.
14. Any other remarks or information .. To begin with, only one Assistant, one Clerk and one Typist will be necessary for the separate Department.

KEY STATEMENT OF SCHEMES UNDER XVIII—"LABOUR AND LABOUR WELFARE."

Serial Number of scheme.	Subject of Development.	Approximate cost of five year plan in thousands.		Category of scheme (viz: Special priority, All-province etc.)	Special remarks, if any.
		Capital.	Recurring.		
1	2	3	4	5	6
120	Opening of Labour Welfare Centres at Karachi, Hyderabad, Sukkur and Rohri.	Rs. 8	Rs. 45	Particular area.	
121	Appointment of a full-time Commissioner of Labour.	Nil.	44	} All province.	
122	Opening of Labour Department in the Secretariat...	Nil.	85		
	Total ...	8	1,74		
			1,82		

XIX.—SCIENTIFIC RESEARCH.

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There is no scheme under this heading of development. Please see Chapter XIX of Part I of this publication.